12-07-01 10:45AM

Bob Cooper's

JULY 15 2001

SatFACTS

MONTHLY

Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

Shared Dish Systems: Field Tests

Review: DSMC 10 Installer Meter

Bandscan: InSat 2E Analysis

✓ Latest Programmer News
✓ Latest Hardware News
✓ Latest SPACE Pacific Reports
✓ Cable TV Connection

Vol. 7 ◆ No. 83
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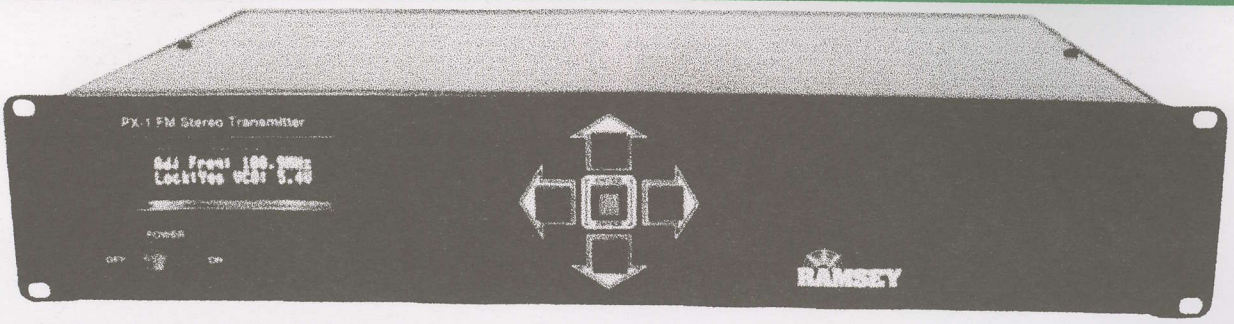

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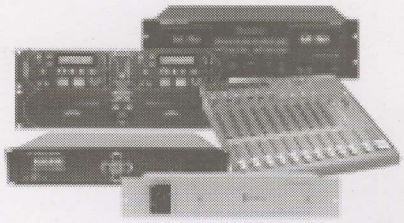

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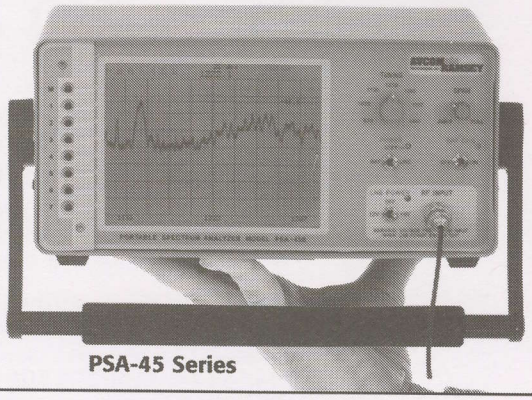

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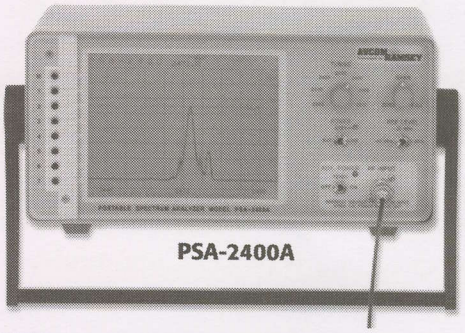
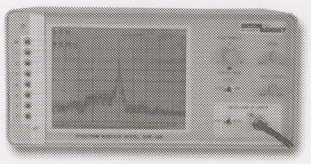
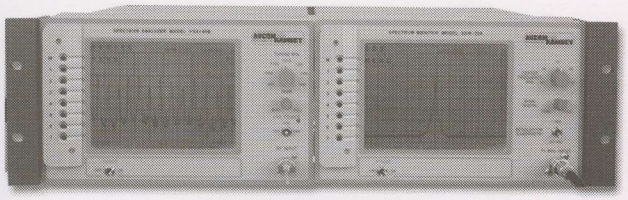


PSA-2400A



SDM-42B



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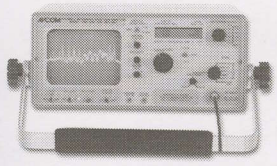

- 950-2050 MHz in one sweep
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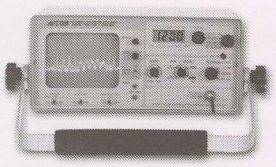

- 5 bands cover 1-1750 MHz plus 3.7-4.2 GHz
- Frequency display

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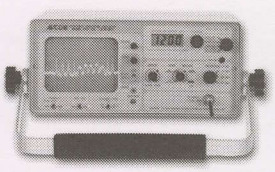
PSA-33A



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YEAH - **right.**

YOU FORGOT!!!

Your wife's birthday?
Your mother in law's visit?
The kid's graduation party?

...

That loaf of bread and litre of milk?

...

BUT registering for SPRSCS 2001?
Miss this one and you'll kick yourself for the next 12 months.

You MUST indicate which topics interest you most - using form below

☑ PLEASE address an invitation to attend SPRSCS 2001 to the individual named below. My areas of interest while attending would be as follows (indicate with "X" mark please):

☐ I am interested in low power **Community FM** radio broadcasting

If yes - please further indicate -

- ☐ I would like to **build** a low power FM stereo transmitter at SPRSCS 2001 and take it home with me
- ☐ The heck with building - I'd still like to **buy** one while there!

☐ I am interested in **SDS** (Shared Dish Systems) - p. 6 this issue

If yes, please further indicate -

- ☐ I am interested in the 950 - 1450 (2150) L-band **retransmission** of dish signals
- ☐ I am interested in retransmission by **remodulating** in L-band from satellite/tape/hard drive
- ☐ I am interested in **2.4 Gig** systems and would like to "play with one" at conference
- ☐ I would be interested in a one-day work shop leading to **building** these systems

☐ I think Aurora-RABS is dead but would still like a chance to **meet with ABA** folks

☐ I want to "touch" and "play with" DVB-T

- ☐ I would be interested in a one-day workshop covering all aspects of DVB-T installation

☐ I am interested in attending Eric Fien's one-day DVB-T course (see page 18, here)

Please place the following name on list for written invitations:

Name _____ Company _____

Mailing address _____

Town/city _____ postal code _____ State/Country _____

Return this to SPACE Pacific, PO Box 30, Mangonui, Far North, New Zealand or, fax to + +64-9-406-1083 or email as attachment to skyking@clear.net.nz

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MONTHLY

ISSN 1174-0779

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This publication is dedicated to the premise that as we are entering the 21st century, ancient 20th century notions concerning borders and boundaries no long define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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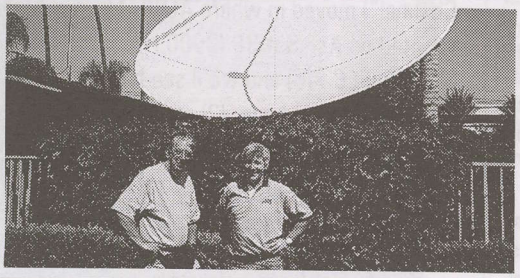
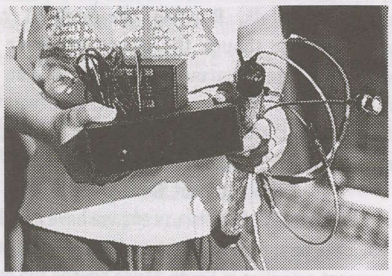
COOP'S COMMENT

July 15, 2001

SDS fever. When I contacted John Ramsey in New York state last August it was old friend's reunion time. John's 1979 Sat-Tec firm created the first home style analogue satellite receivers to sell for under $1,000. If that seems like a bundle, at the time he did this the competition started at (US)$1,995 and went all the way to $6,500. When home style receivers dropped to (US)$500, John did it. Then $400 and so on down to the eventual bottom near US$99. John made a few dollars in home satellite gear, and started to play on the Caribbean Island of Providenciales where I was living at the time. Today he has rebuilt and maintains the five local FM radio stations there I had launched back in 1981.





All of which makes John Ramsey the most ideal person in this world to devise and manufacture low-cost FM radio transmitters and the new SDS hardware. He knows first hand what is needed, why low-cost is mandatory, and what high reliability means when you are located hundreds or thousands of miles from the nearest Dick Smith store.

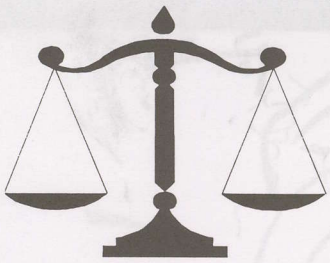
We were eating dinner in an Italian restaurant near Disneyland when I dropped SDS into his life. He stopped eating, a smile broke out over his face as I explained my concept and in one sentence I knew he was hooked to the project. "*This is going to be fun - again!*"

John posed with me near a convenient hotel's C-band satellite dish adjacent to Disneyland (upper, left) and then went home to delicately move microwave parts around a PC board. The e-mails began to fly and one amused me more than others. "*Mike* (a mutual friend) *has a mobile home but he prefers to sleep in motels or hotels. On the mobile home roof he has a Ku-band dish for DirecTV. But he hates having to go down into the parking lot just to watch his favourite satellite TV programming. This will allow him to transmit from the parking lot to his room!*" Look at the photo upper right. That's my 5 year old son Seth's hands holding everything one needs to do just that: The 24 channel agile 20 milliwatt transmitter, a 240/12V power pack to run the thing, and that coil of wire is a collinear antenna you unwrap and hang with a piece of string from a ceiling light or window casing. Plug in your satellite TV audio and video on the rear of the black box and then head for your hotel/motel room with a palm sized antenna and an analogue satellite receiver. *Instant SDS.*

This is nifty (brand new) technology with a myriad of uses (surveillance cameras, sharing DVD movies and rental tapes with neighbours - let your mind wander!). We report on page 6 the first tests and offer this prediction - when SDS is first seen in public at SPRSCS 2001 in Melbourne, the fastest guys into the door will be from Taiwan and Korea with their cameras, notebooks and micrometers.

-ON THE COVER-

This hand holds a 6 dB gain Log antenna covering 950 - 1450 MHz: L-band. It is pointing slightly up to the hilltop in the background where SatFACTS has installed a 20 milliwatt (0.02 watt) L-band transmitter. 1.2km distant. See p. 6 for a report on how SDS works



LETTERS

Things we did not discuss

"I have just received SatFACTS (for June) and read the page 32 editorial in which you mention our meeting/talk. Reading the text, it can be interpreted as though the issues you have raised were discussed (between us), which you and I know was not the case. I would appreciate it if you would clarify that the issues and opinions voiced were NOT discussed with me."

Avigail Gutman, NDS, London, UK

We so clarify. Any discussions we have had did not touch upon the current status of Rolf Deubel nor his present activities in South Africa beyond the general knowledge that he is creating a book to publicise his version of his arrest in Bangkok. The specific mention of THOIC forums, the part they allegedly played in feeding insider-piracy information to NDS and Irdeto has never been discussed with Ms Gutman and we suspect it never will be. Why, after all, should anyone from NDS or Irdeto ever "confess" to SatFACTS they played a role in "setting up Rolf" for arrest in Thailand?

To admit that would be to admit they held the ability to 'manipulate' the Thai government for private purposes which in turn could make both the Thai's involved and the encryption firm liable for civil suits, UN sanction for possible violation of human rights, and, a five minute spot on CNN that wouldn't make either the Thai's or the encryption folks "look good." We'll leave it to Rolf to lay out his evidence on this matter in his book from which history will be the final judge.

Why pick on UEC?

"I do not know what this fuss is all about. I have received and installed approximately 50 UEC receivers and so far not one has failed which is a better record than any other brands I have been handling. And by the way - any serious viewer would connect to the TV via the SCART, not through the UHF output."

Steffen Holzt, Antenne-Cal, Noumea, New Caledonia

New Caledonia has an "official" power service of 220 volts, 50 hertz; New Zealand's "official" is 230V at 50 hertz. Australia's "standard" is 240V and therein is the problem with UEC IRDs in Australia. If 240V is official, but experience says it often exceeds 250 and even 260 in both urban and rural areas, a SMPS power supply that was designed originally for South Africa's 220 system is simply pushed over the edge.

ABC begins HDTV via Sat

"ABC Sydney has begun feeding 4 channels of or associated with HDTV on Optus B1, 12.670, 12.688, 12.706 (all Hz) with Sr 14.300, FEC 7/8. Ch 1 is ABC HDTV, 2 is ABC Sydney, 3 is ABC Kids and 4 ABC TV3."

Bill Richards, Australia

Ch 1 may be difficult with a standard TV set, but 2, 3 and 4 should work as SDTV on a normal PAL receiver - better perhaps on a 16:9 wide screen monitor. Any reports yet of HDTV to a suitable HDTV monitor?

PROGRAMMER PROGRAMMING PROMOTION UPDATE

JULY 15, 2001

NOT *another* Indian music channel? Yup. Indus Music ("The New Music Channel") moved in where ALIVE TV vacated on AsiaSat 3S (3900 Hz, Sr 27.895, FEC 7/8) and we'll see how long this one, (1) lasts, (2) stays FTA, (3) continues to produce high quality product. The Indian track record is not good but hope springs eternal.

Sir Arthur C. Clarke. "*I am going to a trade show in Singapore in mid-June*" noted SatFACTS advertiser Peter Escher (Cordless NZ). "*I have been an Arthur C. Clarke fan for decades - is there any thing you can do to help me get through his security detail for a visit? Sri Lanka is only a few* (aeroplane) *hours from Singapore?*" Peter has all of the "right credentials" to spend time with "the great one" and so we did assist him in his quest. June 18th - the visit, carefully recorded on digital video tape supported by state of the art audio pickup. Escher's "raw tape" is now being time coded for editing into a full hour programme. Peter is not your average "Kiwi Bloke" and here is our prediction - he will become something of a "cult hero" when this special edition of **SPACE P**acific **R**eports airs later this year. We sent Peter with 12 prepared questions for Sir Arthur to respond to in the SPR interview. Question 12: "*If this video tape was to be your last opportunity to leave a message or give advice to a world facing the challenges of the 21st century - what might that message say?*" Sir Arthur C. Clarke, knighted for his contribution to space technology, will be 84 on December 16th. Oh yes - "sneak preview" special showing of the programme is *possible* at SPRSCS 2001 in Melbourne - Saturday September 29.

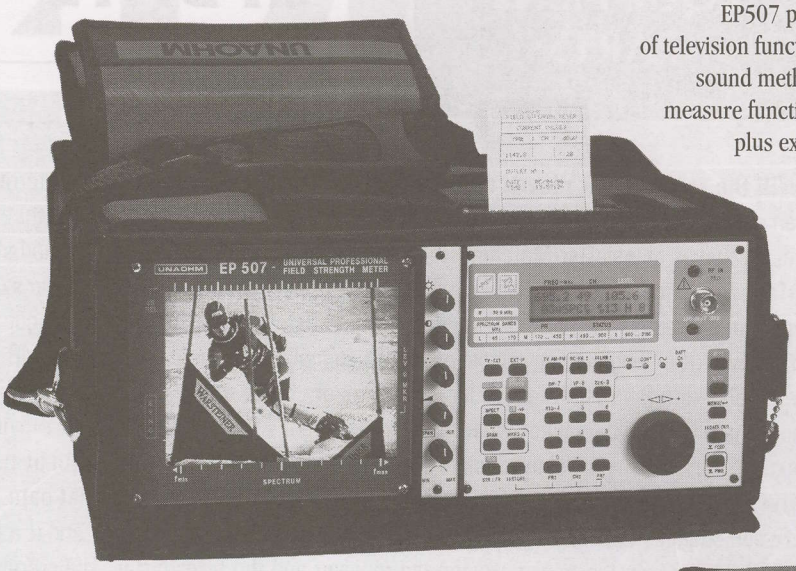
This caricature commissioned by Coop's Satellite Digest (1983) was awarded to Arthur by a grateful USA TVRO industry.

Ain't gonna happen. After telling us they were going to drop EIRP of RFO on I701, 4086LHC, to 15.5 dBw, a new decision. The present power will stay as it is - for at least a couple of years.

TelstraSaturn in NZ. Optus B1, Vt - load in the following sequence: (SR 22.500, 3/4): 12.733, 12.483, 12.706 (12.456 has also been tested). If 12.733 won't load, try Sr 22.400 alternate. Some FTA, some CA, changes daily. This will be/is Irdeto's latest format; programming line-up still being formulated. First tests were on Australia+NZ beam; is now or will shortly be NZ only.

NZ's TVNZ is being converted from State Owned Enterprise to a Crown Company, will downgrade importance of commercial profits and attracting maximum audiences in favour of NZ originated pubic affairs programming; more like ABC-TV.

The growing Unaohm Television Analyser family

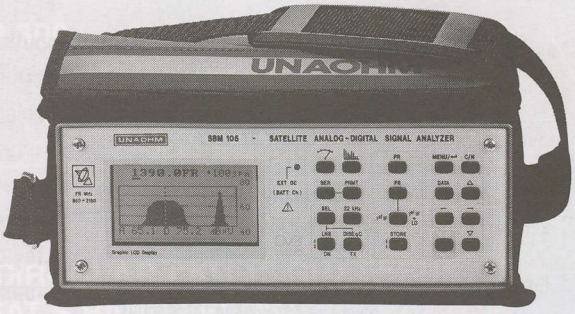


EP507 permits excellence in measurement across a wide range of television functions. Dual colour coded frequency markers provide a sound method of Digital Channel Power measurement. Automatic measure functions include Carrier to Noise and Video to Audio Ratios plus expanded Data Logging. Improved resolution bandwidth displays extra Spectrum detail. QPSK, OFDM and QAM quality measures of Bit Error Rate and Modulation Error Ratio etc., colour Constellation Diagram and printout of MPEG Network Information Tables are available. An internal reference Noise Generator that permits measurement of insertion loss or filter alignment etc. anywhere between 45 and 2000MHz is also available. A quality TFT LCD screen uses colour to clarify the meaning of most measurements, or simply to show a colour TV picture.

EP 319 level and Spectrum measurements feature high accuracy and selectable Resolution Bandwidths of 100kHz, 1.5MHz and 4MHz to provide real time spectrum displays of signals from TV stereo audio and colour sub-carriers to SCPC satellite signals. 5-40MHz is included, with Analogue and Digital data logging. Options include Digital Signal Quality measures of QPSK+QAM or OFDM. Operational running time is extended thanks to a Ni MH battery pack. Dual Spectrum Markers with Frequency and Level difference (Delta) measures, an electronically generated graticule, On Screen Display function indicator, automatic analogue Carrier to Noise and Vision to Audio ratio measures, DiSEqC 2.0 switching, Teletext etc. are included.

EP-313 provides a new benchmark for price, function and quality in a Television Analyser. Spectrum mode uses an easy to see frequency marker. Carrier to Noise ratio, Vision to Audio ratio and Digital Channel Power measurements display digitally and are automatic. 100 PReset tuning positions store your favourite channels, whilst factory preset channel plans enable tuning by CHannel almost anywhere, by FRequency either by direct entry or step. Teletext is standard. Factory Digital Signal Quality options for QPSK, OFDM or QAM round out the EP-313's measurement abilities.

SBM-105 makes all the necessary measurements for Digital and Analogue Satellite signal Quality. Built around the standard Unaohm Digital Signal Quality measures, the SBM-105 includes Spectrum with Analaogue and Digital signal level measurement. The graphic matrix LCD is readable in direct sunlight or low light. Versions are available for QPSK, QAM and OFDM. The SBM-105 is a low cost answer to installer measurement requirements of digital from a company with over 60 years experience manufacturing electronic instruments.



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Importance of right numbers

"Have recently returned from visit to Unaohm factory in Milan and was impressed with initiatives they are taking to create Digital Signal Quality instruments which should be available in time for SPRSCS 2001 in September. Others have rushed what I consider incomplete instruments to market and at least one uses a lookup table to estimate BER from the C/N measurement which creates an imprecise measurement. Others I saw (in Europe) simply have 'Pass', 'Marginal' and 'Fail' but as any competent satellite installer knows, in digital we have only 'lock' and 'no lock'. "

Peter Lacey, Lacey's Australia, Frankston, Victoria

We look at one of the European available installer meters on p. 12 in this issue. How about a combination DVB-S and DVB-T meter with perhaps 20 memory positions allowing separate terrestrial channels to be loaded into memory for a variety of transmission regions? If you believe this ...

"I for one cannot believe that TelstraSaturn (TVNZ) will actually mandate that installations for new competitive-to-Sky service on Optus B1 Vt must have a new dish antenna. It is about as silly as having a rule that homes must have separate terrestrial antennas for each of the competing commercial channels!"

Rolly Whitehead, NZ

Except - except Sky paid for and owns the first dish on a house, as well as the LNBf and RG6, cable clips and F connectors. Perhaps it is more like Jaguar allowing you to place BMW hubcaps on your new Jag! (On the other hand, many in Australia use their Austar dishes to also receive Aurora.)

Greek ERT

"SatFACTS web site asks if anyone knows where the Greek ERT feed which comes to TARBS is being carried into Australia. The answer, I suggest, is found on Thaicom 3 on 3551 Hz, Sr 13.330 and 3640 Hz, Sr 28.066. TARBS is deliberately (or sloppily) mislabelling the Greek feeds - perhaps for security reasons."

PC (a Greek who knows better), Sydney

Australia to PNG?

"I live in the highlands of PNG near Goroka and wish to receive Aussie news and sport. I would like ABC, SBS, 7-9-10 networks. Any suggestions?"

John Hobson, Principal, Ukarumpa International School

Move to Australia, or, try the GWN bouquet on PAS-2 that includes ABC and SBS plus radio services. It works fine in Dili on a 3m solid dish according to Garry Cratt (Av-Comm Pty Ltd) and interpolating, Goroka will be even better.

Aurora Strikes Back

"Optus has shut down my out-of-market commercial services leaving only ABC, SBS and the radio channels. I guess it could be because I never got around to sending back the Guz & Co letter/survey form. How many others have lost some or all of their Aurora service?"

AA, NSW

Only a few reports of this, mostly from people who were claiming to be transient and travelling throughout Australia - apparently not an effective "loophole" anymore.

HARDWARE EQUIPMENT PARTS UPDATE

JULY 15, 2001

Will the real number please stand up? DVB-T (digital video broadcasting terrestrial) is an entirely new ball game - as we all know. So perhaps it is understandable that in June Airwaves newsletter Matchmaster writes, "Your digital signal will lock and stay perfect with a margin of 2 dB however for satisfactory reception on a domestic system you require a margin of 6 dB." Meanwhile in the 2001 Lacey's Australia catalogue (p. 46), they write, "Engineering principles dictate signal level should be at least 9 dB and preferably more than 20 dB above lock." Lock is of course a few tenths of a dB above (more than) threshold - a point where the picture breaks up and has difficulty staying locked. So how many dB above lock is enough? Depends totally on the length of the terrestrial path and the type of signal level variations one can expect on that path between changes of seasons, air temperature, moisture content in the air and if a UHF path, the foliage on the trees between the receiver and the transmitter. The correct answer? Attend SPRSCS 2001's DVB-T Seminar for first hand reports from the digital pioneers!

Speaking of SPRSCS 2001. Here's an interesting contest. Connect a UEC 642 IRD to a variac and start on show-day-one with the output to the UEC at 220 VAC. Gradually increase the voltage to the UEC every hour or so and hold a contest - the guy who guesses the variac voltage output when the IRD finally packs it in gets a prize; perhaps the demo-test IRD with a burnt out power supply!

Fracarro, Italian supplier to Australian terrestrial market, has cracked UK digital terrestrial business with new MATV headend capable of equalising high power analogue and adjacent channel low power UHF digital when the "carrier" (power) difference is up to 27 dB. Tests are underway in Australia to see if the same technology will equalise imbalance between band III analogue and digital signals using 7 MHz bandwidth terrestrial channels (in Europe, Band IV and V are 8 MHz bandwidth). We'll have results to demonstrate at SPRSCS 2001 - assuming it works!

Dishes. TelstraSaturn is sourcing dishes for new Optus B1 service with Triax and Hills brand labelling.

ATVI. Coming back, perhaps as early as September, MPEG-2 format, perhaps not on C2M (it is pretty strange to call it an 'Asia-Pacific' service when the signals from C2M stops at Fiji and never reaches NZ!). ABC will run it, using variety of programming sources. Here's hoping for at least horizontal side of C2M and Pacific beam..

Refined numbers. Steffen Holzt with assistance of Canal + and Intelsat has re-evaluated I701 French bouquet coverage. On southern side, towards NZ and South Australia, the signal contours close up rapidly with 1 dB drop for each 50 km further south one goes. Theoretically, signal drops from 34.5 dB to under 25 dBw between northern tip of North island and central North Island (NZ - for example, Rotorua). Which explains very nicely why viewers in Auckland are having marginal results with "only' 3m Ku rated dishes.

Mediasat's 12.336Vt bouquet on B1 - is conducting "30 day trial" for possible full-time relay of Germany's DW, Portugal's RTPi and France's TV5. One or more will stay operational here provided sufficient "ethnic viewers" pressure their home-country broadcasters to pay the cost of the Mediasat service. USA's Trinity Broadcasting Network (TBN) is another possible occupant here.

16-QAM? Not MPEG-2, not compatible, requires special receiver software. On Intelsat 701 (180E), an interesting MUX containing all of the USA networks virtually full-time with adverts, intended for for Australia and NZ runs FTA because (1) nobody has receivers for this, and, (2) huge antennas are required. Try? 3749RHC, Sr 26.400.

First Report: SDS L-Band

When you demonstrate C or Ku band satellite reception to people who have never had this experience previously, one of the most commonly asked questions is, "How can I get this at *my* house?" The answer, "install your own satellite dish system," may not always be practical (lack of antenna space, narrow-minded objecting neighbours, or simply the cost). This is why we set off in September of last year to find people with an interest in developing hardware for what we dubbed (the) **S**hared **D**ish **S**ystem or SDS.

We found support for the concept after visiting with John Ramsey of Avcom Ramsey Technologies. John began designing low cost C-band satellite equipment in 1979, was a pioneer in reducing home-system costs by a factor of ten in less than two years, and has gone on to create one of the world's most respected test instrumentation and hobby kit supply firms in the world. Some people have a green thumb - John has "microwave finger tips" finely honed over 25 years of designing and then manufacturing technology for the 1 GHz and up world.

This is how it works -

We described the different SDS formats in detail in SF#80 (p. 6). The least difficult to create is simply a low-power FM transmitter which can be moved in tuning steps within the 950 - 1450 (L-band) microwave range. The analogue satellite signals we receive from either C or Ku band birds have a predictable bandwidth (27 MHz is pretty standard), a predictable audio sub-carrier frequency (6.6 or 6.8 MHz is also common) and video standards created to interface with a standard TV set after having been processed (demodulated) with a standard, off-the-shelf analogue satellite receiver. John created an "emulator" - a small (palm of hand size) single channel (but 24 channel frequency agile) 20 milliwatt (0.02 watt) FM transmitter. It has four connections to operate:

1) A RCA socket for video in (taken from a satellite receiver, tape or DVD deck or even a standard TV set),

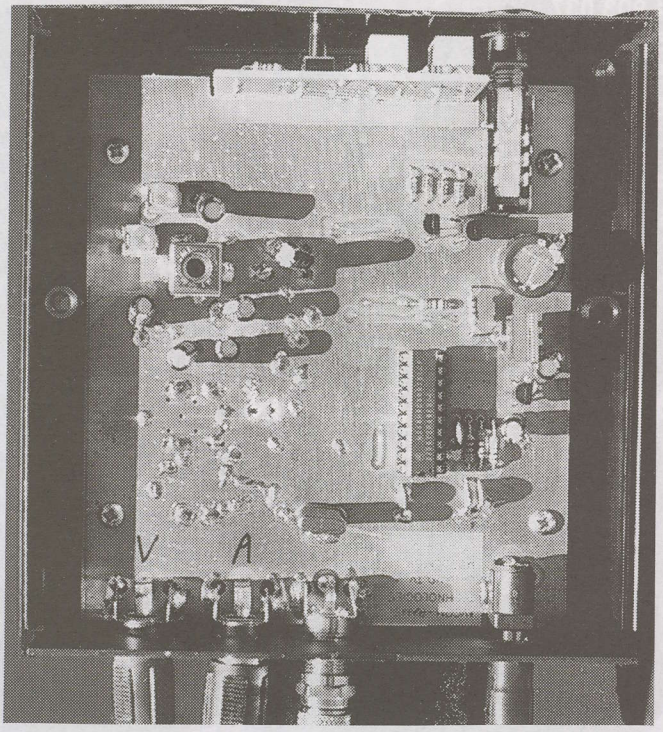
2) A RCA socket for an audio input

3) A 12V DC operating voltage connection (taken from a commonly available 240V AC/12V DC wall pack or power pack)

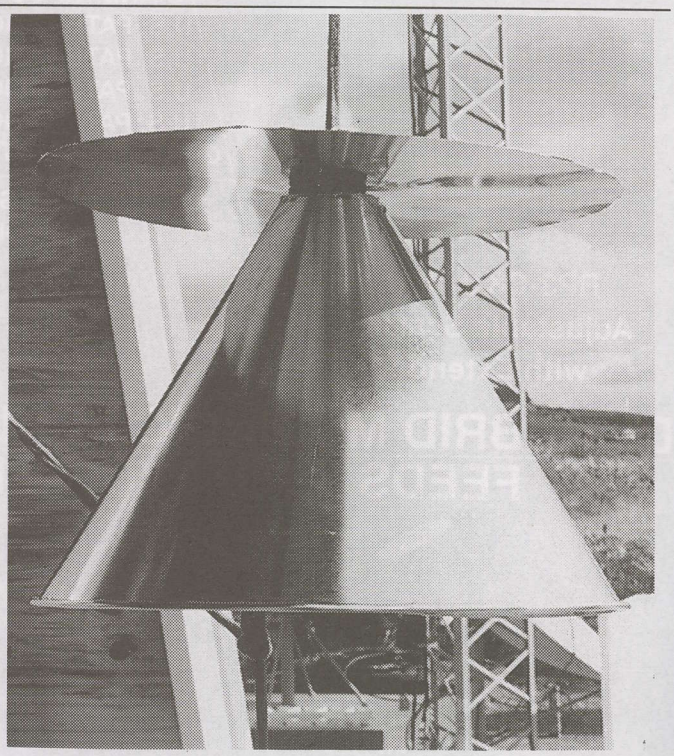
4) A F fitting to which you connect a (hopefully short) piece of double shielded RG-6 cable that in turn connects to a transmit antenna designed to work in the 950 - 1450 MHz frequency range.

20 milliwatts is pretty low power of course - well below the power levels for which many countries even demand a license procedure for transmitters (for example, 100 milliwatt devices in the USA are known as Part 15 - no operating license required; in NZ, 300 mW FM transmitters require no licence).

The test results done at SatFACTS are shown here. The transmitter was connected to a satellite TV receiver which was tuned to FTV Fashion TV from AsiaSat 2 and to the John Ramsey designed "discone" (pronounced disc-cone) transmit antenna. For reception, we took a equally small (palm sized) "log" antenna created by Ramsey and a Promax MC944 combination spectrum analyser and satellite receiver into the nearby countryside. This is a report of our findings.

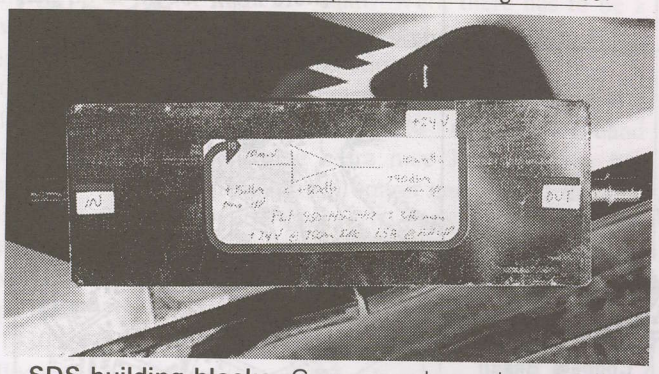


THIS L-band (SDS) 0.02 watt transmitter - plus ...

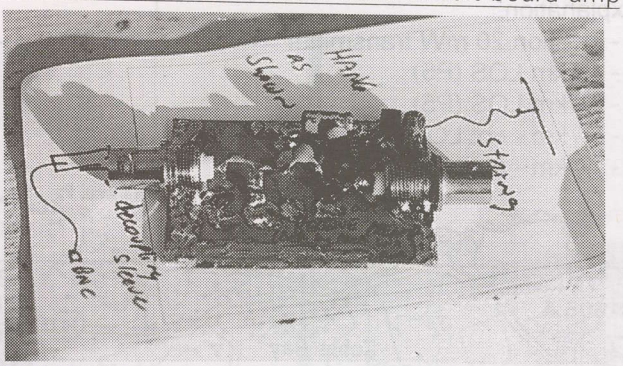


...THIS "discone" transmit antenna to ...

10-watt solid state amplifier is heat generator



15 dB gain low noise mast head circuit board amp



SDS building blocks. Coverage depends upon line of sight (LOS), or, power. You can beat LOS with more power, but we find indoor antennas work only within 200-400 metres maximum range (at 0.02 watt power level) or 700-1,500 metres at 10 watt level. L-band signals will penetrate buildings (but not steel/metal sided) at relatively close-in distances; heavy foliage (such as one would find in Solomon Islands) is typically less of a problem. Bigger (higher gain) receive antennas, low noise (masthead) amplifiers at receive antenna will increase range but we find these equipment enhanced receive-end improvements are modest (typically 10% of less greater range). Improving receive antenna gain into 15-20 dB range would be a major assist!

Ramsey had done his own tests in upstate New York (USA) before dispatching the first trial units to SatFACTS. His comments are relevant:

"Propagation in this frequency band will surprise a person - we expect very limited range at low power (like 20 mW) and when it does exceptionally well it is a pleasant experience."

THIS log periodic receive antenna 1.2 km away ...

PRODUCES this "FTV" picture on a receiver.

Indeed. We found some of what we expected, more of what we did not.

Most microwave frequency coverage is significantly dependent upon the transmit and receive antenna gain. For example, when you have 40 dB of gain at C or Ku in your receive dish, it makes up for low power at the transmitter and perhaps low sensitivity at the receiver. If the transmit antenna also has gobs of gain, all the better.

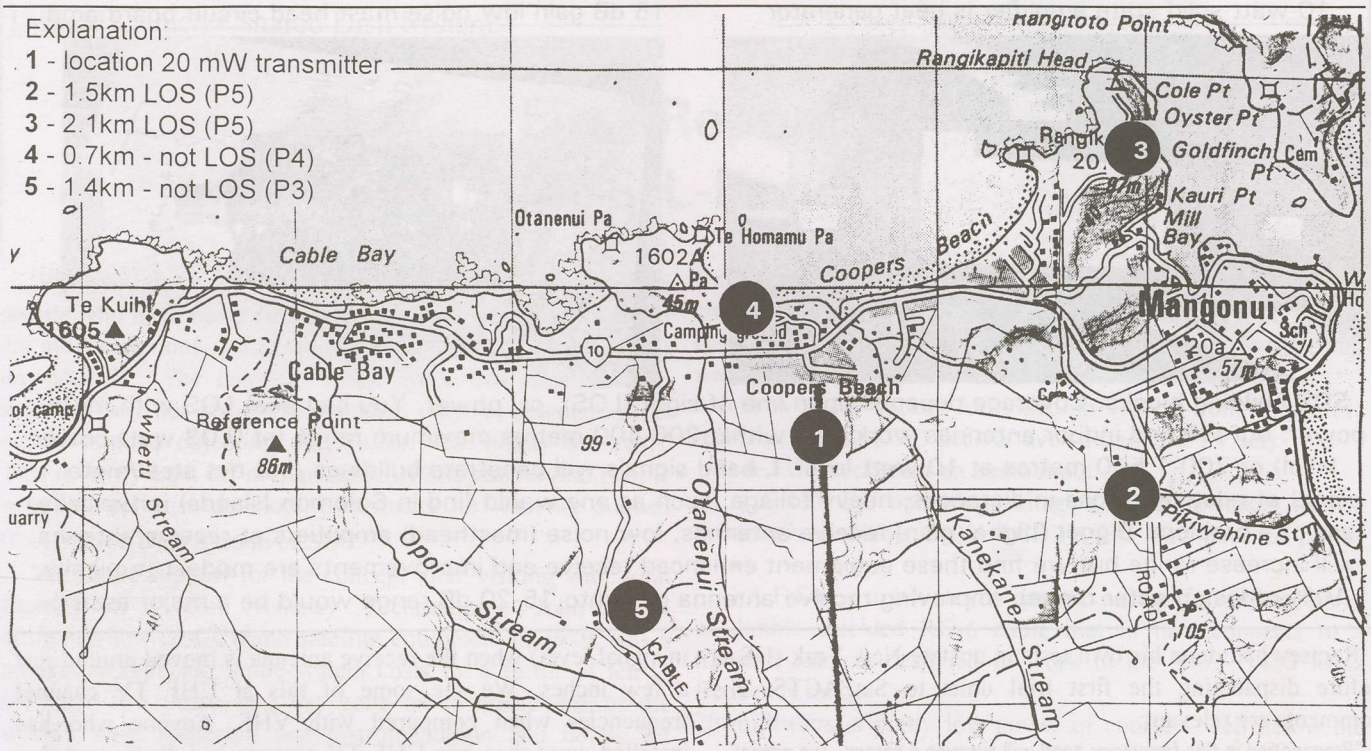
The basic rule of thumb is this:

For each doubling of distance there is a reduction in available receive signal level of 6 dB.

Numbers. Say you measured 72 dBuV at 1 km distance from the transmitter; at 2 km the received signal, based upon that 'rule', would be 72 - 6 or 66 dBuV; at 4 km, 60 dBuV, at 8 km 54 dBuV. That's theory and for many applications it holds out well in practice. But L-band microwave (950 - 2150 MHz) signals are short in wavelength - so much so that you will find "standing waves" in the air which peak and null (rise and fall in signal level) when the receive antenna is moved around just a few inches. We see some of this at UHF TV channel frequencies when compared with VHF. Anyone who has installed more than one UHF TV antenna has discovered that finding the "right" (hot) spot for the antenna can gain you lots of additional signal as a reward for 30 minutes of probing and measurement. L-band is like that by a new factor of ten; locate the best spot (as opposed to just "any spot handy") and big time signal level improvements will occur.

Our 20 milliwatt transmitter first has to be radiated into the air. We trialled a pair of transmit antennas - the "discone" shown on p. 6 and a "collinear" array (p. 8). The discone is a very wide band (hundreds of megacycles) antenna which radiates a vertically polarised signal equally well in all directions. Wideband is critical here - when using the 950 - 1450 MHz segment for transmission and reception, it is akin to using 250 - 750 or 100 to 600. Antennas that will cover such a wide spectrum are a significant design challenge. It is vitally important the transmitter "see" a constant "match" (impedance) over the full L-bandwidth or the system simply won't radiate (transmit) very far.

The collinear looks like a Rube Goldberg affair; some tiny miniature coaxial cable hung by a string from the top with a cardboard tube covered in aluminium foil at the base where the



OUR INITIAL TEST RANGE. Locations marked with (L) are LOS while P1, P2, P3, P4 and P5 are standard analogue reporting techniques (P1 is sync bars, P5 is perfect with gradients in between). This is with 0.02 watt power level, single transmit channel, to discone antenna at transmit site and log antenna at receive site. Receiver used - Promax MC944 TV & Satellite Signal Meter which has a poorer FM threshold (by several dB) than even a modest quality analogue satellite receiver (i.e., we could have done better with a "real" satellite receiver).

Collinear transmit antenna is literally a hank of wire, some aluminium foil, a cardboard tube. We hung it with a string; 0.02 watt transmitter is on child's chair.

same miniature coaxial cable exits and heads for the transmitter. The science here is in how the basic substance (the miniature coax) is "wired" together. The antenna has "gain" but not the wideband impedance match required for this application. The good news is you could use such an antenna if it was "precision tuned" to just the segment of L-band you intended to use for a one-two-three channel system (such as 1100-1175 MHz). The better news is a totally different transmit antenna approach, something called a "discone," which solves all of the wideband problems for not much more money (antenna cost).

The discone. We already know it is broadband in operation - depending upon how it is designed, a discone is capable of covering "several octaves" with a good coaxial cable impedance match. "Octaves?" 1 MHz to 2 MHz is an octave. So too is 10 - 20 MHz, and 300 - 600 MHz. So if you design your antenna for 950 MHz at the low frequency end and 2150 MHz at the high frequency end, you have covered 1 octave (950 - 1900) and a small part of a second one (1900 - 3800). There are three critical dimensions in a discone:

1) There is a horizontal disc supported above a vertical cone: at lower frequencies these could be constructed from a mesh or wires, at microwaves they must be solid (aluminium for example);

2) The cone has a "flare angle" which determines the impedance at the feed point while the length of the cone and the hat (disc) determine lowest frequency of use.

3) The spacing between the disc and the narrow end of the cone which helps establish an upper frequency limit.

The coaxial cable feedline (typically 50 or 75 ohm) has the shield connected to the cone at the narrow top while the centre conductor connects to the disc. There is some magic (as in care required) with this connection process to achieve proper impedance match. The discone acts like a high pass filter - below the design cut-off frequency the match between transmission line and antenna goes bad quickly. However, and this is the neat part, if the lowest frequency of design is 900 MHz, the highest frequency of use is ten times 900 or 9,000! And that is quite spectacular. Finally, the radiation angle is very close to the horizon (i.e. energy is not wasted by being

radiated up at higher angles). Gain? Well, there has to be a down side. Reference a dipole, it is around 3 dB - not great but there are other solutions to that situation.

OK - so we have a suitable transmission antenna. And in a hold-in-your-palm plastic case, a 20 milliwatt L-band transmitter. There's something extra nice John Ramsey has done here. On the front is a push button and a LCD display. Turn it on, the display says channel 1, push the button and it says either 2 or 24 (there are two buttons - one for up, one for down). So we have a frequency agile FM TV transmitter that hops from 970 MHz to 990 MHz to 1010 MHz (and so on up to 1430 MHz) - 24 "channels" in all. Which means - you could collocate up to 24 channels of SDS TV at a single transmit site by using both vertical and horizontal polarisation. If that is not enough - well - a slightly different model covers 1450 to 2150 MHz for a total of 50+ channels, more than most cable systems. If you really wanted to be clever, flip the polarisation to horizontal and add 50+ more for a total of 100+ channels. Lots of potential here for several non-connected systems to operate in the same physical region without interference between systems. The transmitter is powered by a standard wallplug power pack - 12V DC and 500 milliamps is adequate.

The receiver. This is "old fashioned" analogue - FM (frequency modulated) video with subcarrier audio. The kind of service STAR Sports uses on AsiaSat 3, WorldNet uses on AsiaSat 2. You remember analogue receivers - with threshold extension? When digital finally took over a couple of years back the bottom fell out of analogue receiver sales and you could (and still can) pick up a top quality unit for under US$100 - sometimes half of that.

Start with a simplistic (receiving) antenna like the log we show here. That is two pieces of circuit board separated so as to make a tiny "boom" - a twin boom in fact. The elements vary in overall length from 4 cm to 18.2 cm - they get shorter at the front to cover the highest frequency portion of interest and are longest at the back for the lowest frequency portion (950 MHz). In a log antenna, the twin booms to which the elements are affixed are an electrical extension of the transmission line, which actually connects to the front (short element end) of the booms - shield to one boom, centre conductor to the other. With an overall boom length of 36 cm (14") the receiving antenna is hardly a "monster".

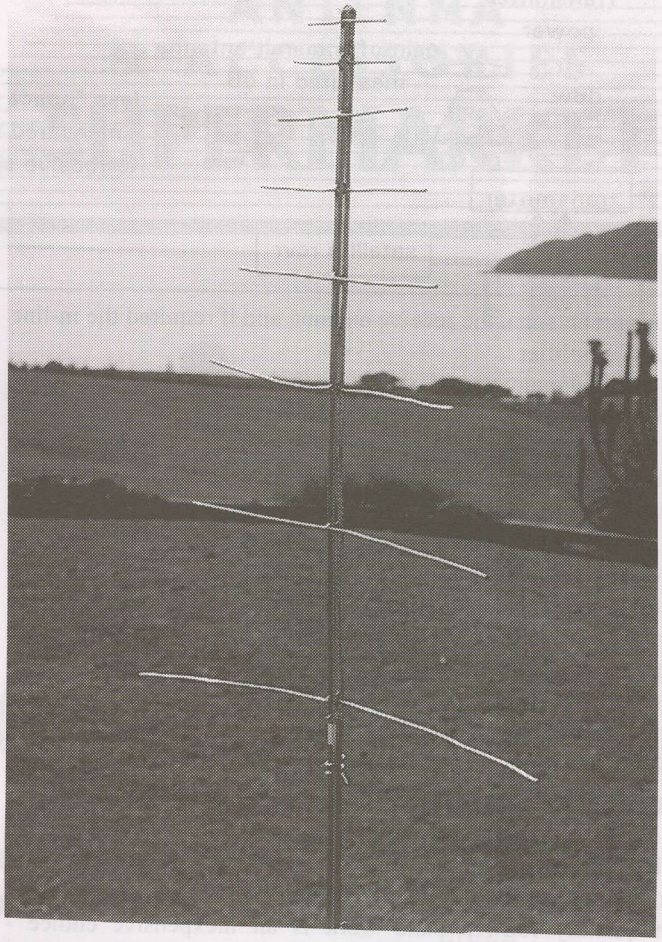
John Ramsey has also designed a "bullet line-amplifier" for situations where the coaxial cable lead length between antenna and L-band receiver is excessive (say 10m or more). This line amp is powered by the standard 13/15/18V DC available from any satellite receiver - this voltage normally powers the LNB, but in this terrestrial application it can power a line-amplifier on the way to the log antenna.

The improvement factor with the in-line bullet amplifier will depend greatly on two things:

1) How good (as in, sensitive) is your L-band receiver to start with?

2) How much line length do you have from the log antenna to the receiver input?

Ramsey has deigned a low noise (3 dB noise figure) line amp with 15 dB of gain - probably as good as it needs to be for this application (state of the art could create a noise figure of under 1 dB and virtually any voltage gain - dBs - you needed). We found that if we had a picture without the line-amp using the Prosat MC944 as a meter and receiver, adding the 15 dB line amp improved the contrast (reduced the noise or eliminated it). But if we had no lockable signal to start with, adding the line amp did not suddenly create an image - even one of poor quality. Perhaps (but we doubt it) a state of the art 1 dB noise figure line amp mounted right at the receive antenna might create an image where without the amp there is none - and Ramsey has such a unit scheduled for test.



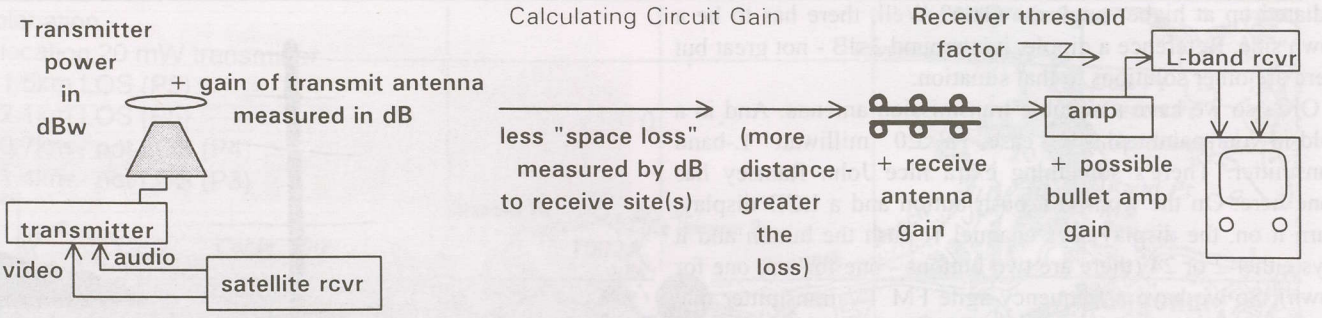
THE receiving end log antenna. As shown here, this is 1/3rd actual size! A log is a special wideband receive antenna design on the following theory: (1) The boom (support for elements) is actually two booms - parallel to one another but not connected and not touching each other; (2) Half of each element is soldered (connected) to each boom (at right angles to the booms); (3) The transmission cable (75 ohm) connects to the very front of the booms; shield to one boom, centre conductor to other. This model we used for reception tests is 36 cm long (front to back), the longest element is 18.2 cm, the shortest (at front of antenna) is 4 cm. Booms are made from copper PC board. Gain at any frequency is approximately 6 dB.

In fact, if you want more receive system gain (transmission range), there are two ways to get it:

1) Raise the transmit power (the 10 watt amplifier is 27 dB more signal than the 0.02 watt unit we used for these tests), or,

2) Select a receive antenna with greater gain. For example, at 950 MHz a 60cm offset dish should produce 13 dB of gain.

There is a new phrase of relevance in SDS work - one that has not been used in general satellite work for decades. It is "circuit gain." It means the total gain between the transmitter (measured as a function of watts converted into dB), the



transmit antenna, the receive antenna and if required the in-line bullet amplifier.

Circuit gain comes down to the total amount of "gain" required to get a suitable signal (carrier to noise ratio or C/NR) to a distant receive point. For FM with a 27 MHz bandwidth, we should have a 8 -10 dB C/NR to be above threshold and that means 8 to 10 dB *more* signal than noise.

If a distant receive point has a 4 dB C/NR, you are 4-6 dB shy of having enough to produce a sparklie-free image. One way to get it is to increase the power at the transmitter (make the 0.02 watts 0.08 watts). Another way to get it is to increase the receive antenna gain. Ramsey suggests the log antenna used for our tests (and likely to be a "standard" low price end antenna when the equipment is released for sale at SPRSCS 2001) has 6 dB of gain at any given frequency between 950 and 1450 MHz.

If our example location has a 4 dB C/NR and we need 4-6 dB more gain - then we must turn the 6 dB gain log into something else with 10-12 dB of gain. A 60cm offset dish sold in quantity for Ku band work is an inexpensive choice - because it will give you 13 dB gain if - IF - properly illuminated. That means the small "feed" antenna used to catch signal collected off of the offset dish surface is good enough to realise the full 13 dB of gain theoretically possible with a 60cm offset dish. Properly "illuminating" a 60cm offset dish is not a subject we'll explore here at this time, but it can be done.

Why not just add a 15 dB gain bullet amplifier to make up the 6 dB needed? The primary reason is that the bullet amplifier raises both the signal (4 dB C/NR) and - AND - the noise simultaneously. You end up with more signal, but more noise as well. In a best case situation, the C/NR with a 15 dB gain bullet amplifier might improve to 6 dB C/NR. The reason is the same as with UHF terrestrial reception and adding a low noise masthead amplifier. And beyond the scope of this discussion at this time.

Circuit gain is a very important measurement tool for determining reception possibilities with SDS. As Ramsey notes, "propagation at L-band will surprise people who think microwaves only follow line of sight." If you use enough transmit power line of sight (LOS) is surpassed by two factors:

1) The ability to "drive through" obstacles (such as dense foliage (trees), even buildings, and,

2) In areas with tall objects (tall buildings, hills and mountains) signals bounce from solid reflective surfaces and you can locate an indirect path between transmitter and receiver by pointing the receive antenna at a reflector (side of a building nearby); see SF #76 - Direct and Reflected, p. 10.

It would seem that going from the low cost 20 milliwatt to the higher cost 10 watt would be a fair trade for servicing a larger region with smaller receive antennas. Perhaps. When you use ten watts, there is a "pollution" element added. Ten watts of power will be strong enough to bounce off of everything around you, creating a situation where other SDS users in the same geographic area might not be able to operate without interference from your ten watt unit. As a commercial decision, that might be a good one but socially it would be equally irresponsible.

The essence here (and we'll give you a better report in August after firing up our own ten watt amplifier) is that if you keep the transmit power down and "force" the receive installations to adapt to suitable reception antennas (with or without bullet amps) to achieve suitable C/NR performance, you are keeping "RF pollution" to a minimum and making it possible for others to operate in the same geographic area without interference.

An illustration. If our 0.02 watt transmitter produces P5 reception using the discone transmit antenna and log receive antenna at 2 km distance - how far would the same discone and the same log reach with a ten watt transmitter?

We'll verify the answer in August but based upon the extensive testing done with the 20 milliwatt unit, it calculates to 48 km. No typographic error there - 48 km. This assumes only that you have LOS (line of sight) between the two points. And that should end all questions you may have about the ability of L-band to penetrate to distant points with modest (ten watts is in the scheme of life "modest") power.

Of course the reality is 99% of all SDS installations will not be groping for long distances - they will want the ability to shoot through obstacles so that homes within a kilometre or two can receive the transmissions with minimal receive antennas. The log shown here, perched on top of the TV set, would be quite ideal. Power will do more to help penetrate buildings than bigger antennas at the receive end can accomplish - without the need to turn the receive antenna into a sizeable antenna attracting unwanted "attention". Some experiments we will pursue during SPRSCS 2001 in Melbourne will include keeping both the transmit antenna *and* the receive antennas indoors - out of sight and hidden from prying eyes. Could you suspend the discone with a string in a closet and expect signals to penetrate to the outside world, into the air and through someone's nearby (1-2-3 kilometres) building walls to a top-of-TV set log antenna? When we begin tests of our ten watt amplifier unit shortly, that will be one direction we will be going. In a world where people (authorities) scan building tops searching for obvious antennas, being able to keep both the transmit and receive aerials indoors would be a major plus.

This is a brave, new frontier. Nobody has done this before and while we may have plenty of theoretical guidance, the SDS tests conducted by SatFACTS and those to follow from other L-band terrestrial pioneers will be "writing the book" for thousands to follow. If you are a satellite business person and you cannot "see" the business potential here, well - you may have blinders on. Welcome to the 21st century.

A test instrument you won't buy

Toy, Tool or Test Instrument?

When is a test instrument not a test instrument? That is the sixty-four dollar question as you grasp the Skinka Electronics Ltd DSMC 10 "Digital Satellite Meter" in the palm of your hand.

Back in the analogue days, installers were encouraged to use some sort of in-line signal level meter for locating and peaking the satellite dish portion of a system. Analogue signals being FM (frequency modulated) were relatively easy to "detect" (observe the presence of on a meter or set of LED displays) and by the termination of the analogue period costs had come down to the $100 range for such an "instrument." Only *instrument* may be the wrong descriptive word here.

Digital presents some unique challenges to meter designers. There is no "carrier" in the analogue sense, and if you have no carrier, you also have no sync pulses. Terrestrial analogue meters first found the carrier and then used the sync pulses within the carrier to reference for signal measurement purposes.

Lacking a carrier, lacking sync pulses, the only apparent way to "detect" and "measure" a digital signal was to either display it on a screen (as with a spectrum analyser) or do a full signal reception-detection-bit error rate procedure just to get at a "reference number" which could then become a tuning tool for the (antenna) installer. A comparison: Vehicle speed is measured by determining how fast the tires rotate. Call that analogue. But suppose you had to go inside the engine to see how fast the cam shaft was rotating, then you had to take that number and integrate it with the gear box and drive axle before you could determine vehicle speed? That's Digital's challenge.

A firm selling spectrum analysers that compute BER and also create various on screen or LCD displays to report on the apparent "quality" of a digital signal have little professional use for a tiny tool that does virtually none of these things. Spectrum analysers cost several thousand dollars; tiny tools cost a few hundred.

The DSMC 10 was (not *is* - we'll explain) a hold-it-in-your hand installer meter for digital satellite. It has no value for anything else, will not measure analogue. A spectrum analyser such as the Unaohm EP507 is to television reception what a MRI is to determining whether a person has a brain injury. The EP507 looks "inside" the digital data stream, decides which portions are skewed or polluted, and then advises you what must be done to repair them. Just like the MRI in the hands of a skilled surgeon.

The DSMC 10 is more like the take-your-own-blood pressure machine one finds at a well equipped pharmacy. It gives you a number - a single number - and interpretation of that number is up to the person making the measurement. You don't need to be a doctor to use the pharmacy machine, nor a professional engineer to get value from the DSMC 10.

What it does do

The instruction sheet packed with the tool is deceptively simple: one A4 sheet, turned sideways, partially filled with 9 point print; fewer words (by count) that you will find on this page. The basic steps are as follows:

1) The meter arrives with a carrying case, a 12V DC power cord, and a 240V AC charger.

2) Take the meter out of the case and inspect.

3) Connect the 12 V DC cord from the charger and plug in the charger. If this is a first charge from the factory, allow 8 hours for the initial charge. If this is a recharge, 4 hours. A charge should handle 10-15 installs, by the way.

4) At any point you may inspect the progress of the charge by reading the charge percentage on the LCD screen.

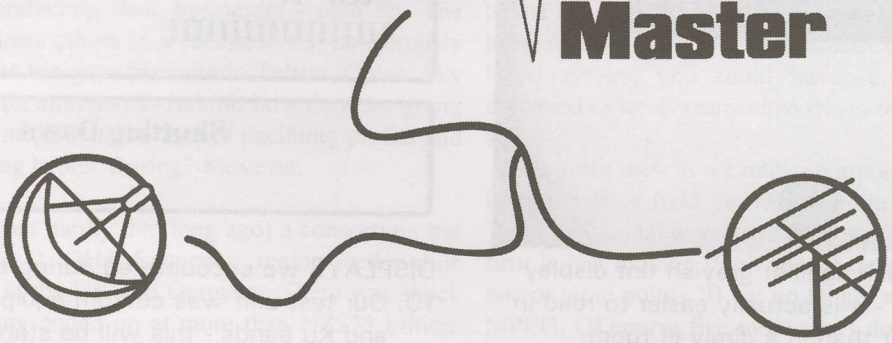
5) When charged (90 - 100% indicated on LCD and our test unit never got past 98%), you are ready for action.

Turn it on (press top button of two on front of instrument). The unit responds with a beep, displays a corporate product notice, and then 2 seconds of battery condition.

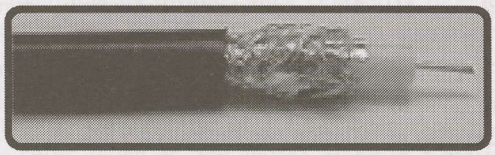
On top of the hand held device is an F connector. Before turning it on for a real measurement, you have the LNB(f) connected through a piece of RG6 to this fitting. The DSMC 10 provides LNB operating voltage: + 14 (Vt) or 18 (Hz) volts so it is you, the dish, LNB and DSMC 10 standing out there shivering in the cold trying to get a signal. Internally, the device has ten factory (or distributor) loaded software memories. Each corresponds to a single satellite, on a single

Skandia

with 21 years experience in cable brings you... Cable Master



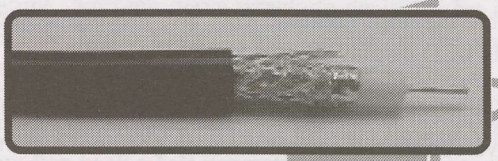
RG6 quad cable



Inner Conductor:	1.02mm Copper Clad Steel
Dielectric:	4.60mm Foam Solid Polyethylene
Inner Braiding:	0.16mm Aluminium wire x64%
Outer Braiding:	0.16mm Aluminium wire x48% PLUS double Aluminium Foil
Foil Type:	Bonded Aluminium Foil
Sheath:	7.40mm PVC
Impedence:	75 Ohm
Packaging:	305m Quick Pull Box or 305m Reels

Attenuation:	dB/100 metres(20 deg. C) ±5dB		
500MHz	1GHz	2GHz	3GHz
-19.98	-22.808	-12.702	-8.7525

RG6 dual cable



Inner Conductor:	1.02mm Copper Clad Steel
Dielectric:	4.60mm Foam Solid Polyethylene
Braiding:	0.16mm Bare Copper x64%
Foil Type:	Bonded Aluminium Foil
Sheath:	6.90mm PVC
Impedence:	75 Ohm
Packaging:	305m Quick Pull Box or 305m Reels

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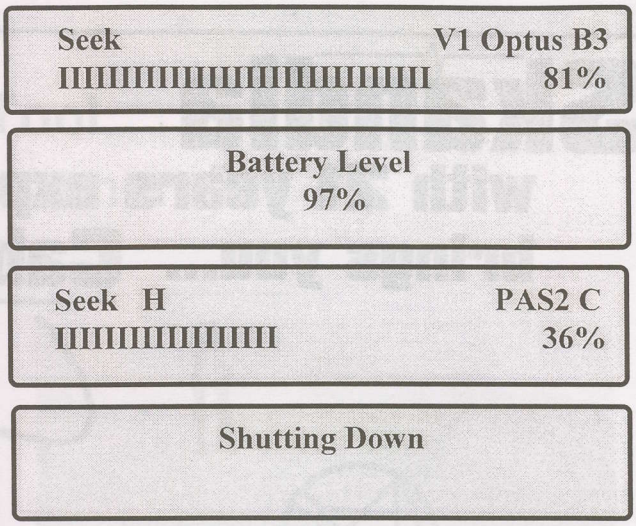
Fax: 61 03 9819 4281

Test Desciption:
Calibration was performed using a Network Analyzer to measure the Insertion Loss (S21) of the cable provided over a frequency range of 30kHz to 3 GHz.
Also the Return Loss (S11) at one end of the cable was measured with the other end terminated into 75 Ohm.

Markings on the cable were indentified as follows:
"CABLE MASTER RG6 QUAD SHIELD 75OHM".

Skandia is an Australian Owned Company.

LCD readout is black against greyish tint display screen background - it is actually easier to read in bright sunlight than in a dimly lit room.



DISPLAYS we encountered during testing of DSMC 10. Our test unit was custom-equipped with both C and Ku bands - this will be standard option.

polarity, and a single transponder there. By selecting correct position with the top button, you are picking a specific satellite. The LCD display advises you of the satellite you have chosen.

If the instrument is turned on, connected to a dish + LNB, and you have chosen the correct memory position, a glance at the LCD screen advises you of where you are. The theory is that you are already in the general sky-region of the chosen satellite (you have installed dishes previously - *right*?) and you will use the DSMC 10 to fine tune the dish's mechanical adjustments (azimuth, elevation) for best signal. Which is what your job is all about - if you are an installer.

The meter beeps when a signal is found or bouncing in between locked and unlocked. We found the DSMC 10 we received for test had widely different indicated signal levels for transponders which were already locking on appropriate receivers (a cable headend is a handy place to test something like this - 11 dishes all come in, each with signal splitters in place; just plug into a splitter.) There is a message here.

We had provided Skinka Electronics with a list of ten transponders (on different C and Ku band birds). They require the name of the satellite, the polarity of the transponder to be memorised, the name of the service, the nominal C or Ku band downlink frequency, the LNB local oscillator frequency you will be using, the Symbol rate and the FEC. Times ten (once per memory position).

When you are truly installing a dish (and not checking out performance in a cable headend), we are back to dialling up (pushing the top button) until the memory position identifier corresponds with the satellite you are trying to receive. We selected different frequencies on B1, B3, PAS-8 Ku, PAS-8 C, PAS-2 Ku and so on for our ten.

There are two LCD displays that tell you what is happening; a "bar graph" (actually a series of vertical lines that progress from left hand edge to the right as the signal becomes stronger), and a percentage ("81%"). Our preference was the percentage.

And this is where the DSMC 10 differs widely from a spectrum analyser BER display. Everything about the DSMC 10 reading (percentage or bar graph) is relative. To itself. Not to any standard or other instrument (excepting perhaps another DSMC 10). In our neighbourhood we checked five different Sky NZ Optus B1 Vt installations previously done by installers. All used 60cm range dishes, typically had under 25m of RG6 cable where we plugged in to measure signal. It ranged from 64% to 88% over the five locations. At our own Sky NZ 1.2m dish installation, we measured 91%.

We asked Skinka about this and were told, "In Europe installers generally expect signals in the 75 - 85% region when installing BSkyB systems."

But are we measuring BER? Yes, and no. Yes, that is the source for the percentage reading, no it is not the same BER you would determine with a Unaohm EP507. With the DSMC 10, you might begin with a reading of 22% (not uncommon when an LNB[f] is plugged in but the dish is pointing at the sky with no satellite) and then find the satellite (meter now says perhaps 43%) and as you peak on the satellite the signal rises to 60%, 70% and then tops out at 81%. After a few installs with the DSMC 10 (or after checking previously done installs) you will quickly determine the "nominal-normal reading" for your work. If 70-80 is that range, you now have all you need to use the DSMC 10 to install and peak dishes.

Humm?

OK, so it is not a spectrum analyser and won't substitute for one. But at the price (UK200 pounds - today $A544) it is a useful installation tool none the less if it saves you time (money) by reducing to 1 the number of times you go up and down the ladder at each install.

We are baffled by the bottom button. The instructions tell us, "*By pressing the bottom button one can change between vertical and horizontal picture quality (BER).*" First assumption - you are changing LNB voltage from 14 to 18. Wrong. Second assumption - there is no second. We can detect nothing useful happening here - when you push the opposite polarity, the meter reads nothing at all (the ultimate opposite polarity null indicator?).

Alas, this meter/instrument/device is not for sale. The first 1,500 are sold and no more will be produced. A newer version ("Horizon") with more features is planned by September (available through them at SPRSCS 2001). To find out where you can find one sooner contact Bill Eaton in the UK at fax +44 1400-282737 or e-mail as billkce@msn.com.

Every day a new plan ...

The plan - she is a'changin (*)

If *your* business depends upon decisions other people make in the course of conducting *their* businesses - read on. The present economic times (short of a recession but dangerously close) are forcing the big guys (definition: Telstra, Optus, Sky NZ, Murdoch and his minions) to rethink how they are going to continue to be profitable in the face of declining profits and recessionary spending habits. Boring? Move on.

3G migration

Earlier this year (but hardly that long ago) a consortium bid on newly available 2 GHz frequency region cell/mobile telephone channels in the UK and Germany. There was shock when the UK bidding ended up at more than NZ$75 billion. That is billion. Weeks later the German equivalent auction created bids that went past NZ$85 billion. How could any firm dream that by owning some cellular or mobile telephone frequencies they would ever sell enough telephone service to pay for such an extravagant purchase price?

The answer is something called 3G (G is shorthand for generation). The promise of 3G has been that by using very small "cells" (such as one square block in a major city) and interconnecting the small cells with a wide bandwidth backbone link, a person equipped with a Third Generation (3G) cell phone could receive very high speed (10-40 megabits per second) data on the move. Or television. Broadcast television, pay television, closed circuit television. Virtually any amount of data to a tiny handheld LCD/TFT screen display no matter where you are located. As long as you are where 3G service existed.

Perhaps you should forget about 3G. Just six months after they spent tens of billions of dollars for enough microwave channels to support 3G, the bloom is off the rose. Even before it started, 3G seems aborted; the fickle finger of fate has swung the pendulum away into something even more revolutionary.

Stand by to abort MPEG. Because TURBO CODE is coming.

Firms such as Turner, Star, Foxtel purchase (lease) satellite transponder space based upon how many TV channels they wish to deliver to homes. The technology of compression has improved markedly in the past five years but all start with the premise that the TV signals will be MPEG-2 compliant or a close relation to compliant. MPEG-2, adopted by a world body just six years ago, has had it. TURBO CODE is the next replacement and there is no reason to believe TC is the ultimate in compression. Here is the bottom line:

1) Turbo Code is here, and has been available for about 12 months;

2) When a firm selects Turbo Code versus MPEG-2, they require only 50% (one-half) of the transponder space;

3) And the killer. Turbo Code is not backwards compatible to MPEG. If you are Telstra-Saturn in New Zealand and you have selected MPEG-2 with Irdeto for your new satellite to home system, you could have selected Turbo Code and delivered twice as many channels in the very same transponder space.

Of course there is a catch; a temporary catch. Nobody in the home receiver field yet manufactures Turbo Code receivers. The professional guys have them for their links of course. If a firm is just moving (high speed) data between point "A" and one or more points "B," it no longer makes any sense to select MPEG. Of course five more years down the road, it probably won't make any sense to select Turbo Code either because something better, faster, is going to come along. In the meantime, big time nerve wracking decisions for the linkers - MPEG or Turbo Code? This frosting on the cake - Turbo Code works with weaker signals (lower Carrier to Noise) than MPEG. Which means? Smaller dishes, lower signal levels to reach the same spots with twice the data flow of MPEG.

Now step back a half generation from MPEG to the analogue days. Firms with names like Winnersat have been producing analogue equipment for SMATV, MATV and cable headends for decades. Would it shock you to learn that we are right now - today - seeing the very end of the analogue equipment runs?

Here is the nexus of several conversations I had with name-brand analogue MATV/SMATV/Cable suppliers at Singapore's CommunicAsia 2001 Conference in mid-June:

" We must manufacture 100,000 of a model of (MATV/SMATV/Cable TV) modulator or signal processor to make a profit. The first world countries have made it very clear they will be purchasing virtually no analogue equipment after this year. Without these markets (UK, Germany, France, USA etc.) available to us for analogue equipment, it will no longer make economic sense to continue building this equipment. Somebody with a small manufacturing facility will step in to fill this void, but of course at far smaller production runs. And this means the MATV modulator that now leaves our factory at US$100 will rapidly climb to three or four times that number when the major firms such as our own stop analogue manufacture."

Got the picture? The transition is on, first world countries are driving the change and if you live or work in a third world environment and require analogue equipment for some years to come - good luck. You'll find it - increasingly expensive and more and more difficult to source.

Fittings. SatFACTS has told us the history of F fittings (#79, p. 2) but the truth is there have been no really major improvements in this do-everything-fitting for more than twenty years. In Singapore a "F fitting revolution" could result in new commercial pressures on firms such as Augat. You'll see these tidy new creations at SPRSCS 2001, but here is a hint at what they do: (1) No crimping tool (darn, drat!), (2) electroplated brass materials (which means no galvanic problems with aluminium clad RG6 cables), (3) no soldering

*/ Major segments of this report were created by Eric J. Fien of Broadnet, NSW. Fien was an instructor at SPRSCS 2000 and will again be a teacher during SPRSCS 2001 in Melbourne September 27-29.

STRONG AUST NEWS

July 2001

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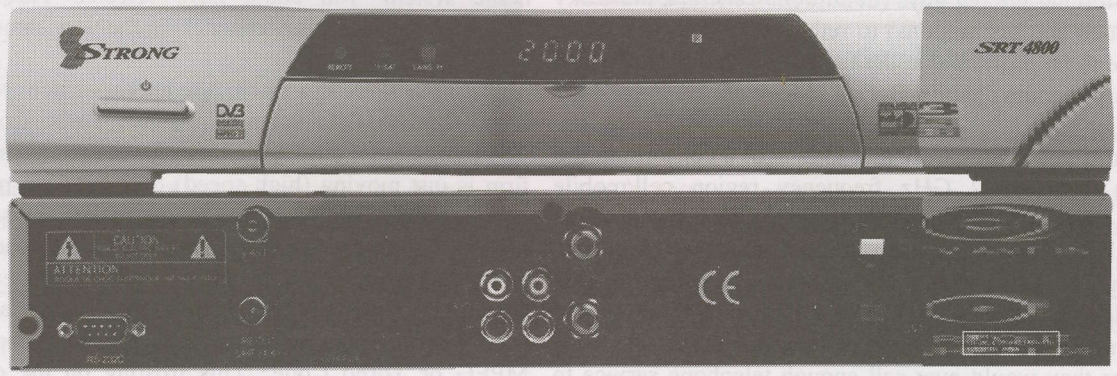

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(just had to say that because you are sitting there saying - "well, if they don't crimp it - how does it stay together?"), (4) when installed it is rated at 2G pressures (that's right - no crimping tool, no soldering but it takes more than 2,000 pounds of pressure to pull them apart), and (5) They cost less than the Augat SNS series (which until these guys came along were a pretty good fitting). But you'll have to wait until Melbourne in late September to see this innovation.

And there is the TFT display screen business. If you are into serious computer displays, do fine detail engineering drawings and the like, you already know about the (yawn) 15" TFT screens that are top of the line for such adventures. Now there is a new TFT display system that does two things which previously were not compatible; computer display and (here's the new part) digital video imaging from a DVD player, S-video, or high end satellite or DTV receiver/decoder. A one screen display that can do both with the amazing clarity of TFT has simply not been available - previously. It looks like something near A$1,000 (trade price) with availability (strangely enough) in September.

...

Having Eric Fien as your personal teacher

Eric has volunteered to put together a one-day cram course for people who will be bidding on or creating high rise building digital + analogue MATV/SMATV systems in the future. Eric's firm has recently completed wiring of what is believed to be Australia's first analogue + digital terrestrial and analogue + digital satellite MATV/SMATV system. The project completely modernised the distribution system for 'The Chifley Tower (Sydney) which occupies the better part of a square block rising 47 stories (42 of which are occupied by rental-lease customers). The concept was that any tenant of this building should have immediate highest-quality wall jack access to any Sydney available terrestrial analogue or digital TV or radio service, and through a covey of satellite antennas on the roof, a wide range of business oriented digital services (such as CNBC, Bloomberg, and so on). In all, more than 2,000 wall outlets spread through vertical risers in a complex "cable" system that grants access to virtually every form of broadcasting service and downlinking which a business might require.

As Eric motes, "What we have learned - the hard way - is that in a mixed band III environment where there are simultaneous and adjacent channels of analogue and digital transmissions, the logical solutions to delivering both formats to every outlet without blemishes simply do not work. There are some very serious mistakes to be made here and some equally aggressive learning curves." Fien's Chifley Tower system will be featured in a report in SatFACTS in the near future.

Eric is willing to conduct a one-day cram course titled "Successful Commercial DTV Installations" within the umbrella of SPRSCS 2001 in Melbourne. The price per participant for the one day event would be $375 and Eric wants a minimum of ten students to make it worthwhile to haul the necessary equipment and teaching supplies down to the conference from Sydney. The most likely day for this would be Saturday September 29. If you have an interest in this, contact Eric Fien directly using e-mail broadnet@ihug.com.au or, check off the appropriate box on the sign-up card adjacent to page one in this issue.

Meanwhile in New Zealand -

An obviously unhappy installer guy writes:

"Sky NZ's recent policy change which now excludes non recognised installers from performing commercial installations is a sad measure of their imagined self importance and further illustrates their belief 'their stick is bigger than anyone else's'. To enable me to purchase Sky equipment (or access them - such as their decoders) and continue to do commercial jobs (something I am uniquely qualified to do - as opposed to the typical Sky installer who is qualified only for home systems), I must be a part of or closely affiliated with a Sky contracted aerial company and be on a regular call out roster (prepared to travel as far as 100 km to an installation I did not do, have no familiarity with, all for the outstanding compensation of NZ$60). I very much understand Sky's objective of eliminating or reducing so-called 'cowboy installs' (wham, bam, thank-you m'am!) and the need for corporate-Sky to get a handle on and control of call-out expenditures. What happens is that genuinely skilled folks, like myself, are the first to jump ship leaving behind those who can't find employment elsewhere because their skill levels are lacking. Enter into this not very attractive scenario a new firm; TelstraSaturn. Unlike the situation in Australia where Austar and Foxtel have carved the country up into zones of activity and one does not cross over into the other's 'territory', here in New Zealand TelstraSaturn is going to be slogging it out street by street, town by town with the established Sky service. I have no concept at this stage how TelstraSaturn will approach the installer portion of the business but I would ask them to be more conscious of the need for high quality workmanship than Sky has been to date. For example, Sky's one-set-price payment policy for domestic installations creates a situation where the installer feels he has no leeway, no room to manoeuvre, that he is forced by economic circumstances to make an installation conform to Sky policy, not to customer needs or requests. Perhaps those who like myself have found Sky unpleasant to work for or with may gravitate to TVNZ + TelstraSaturn and by our experience have a positive impact on the way the TS service develops. The mistakes that have been made, are still being made, are correctable. But only if there is a brand new look at the problems and a willingness to listen to experienced installers who often are much more familiar with the *real* problems than the management people hired to ride herd on us!"

A fair amount of "hostility" there. Coop's Technology Digest (June 29) devoted 7 pages to the very strange status of TVNZ + TelstraSaturn. Here is a short-form summary.

1) TVNZ wants to create a free to air (but Irdeto format) bouquet (MUX) for all of New Zealand's (terrestrial) FTA services.

2) TelstraSaturn plans to include the same FTA terrestrial channels inside their CA bouquet;

3) TVNZ wants to use a state-of-the-art IRD with modem capable of communicating (through the telephone line) with a central server;

4) TelstraSaturn plans to use second hand Pace DGT400 set-tops from Australia - no modem.

TVNZ will not test their (FTA) "portion" of the two transponder MUX until October - or later. TelstraSaturn is already on the air with tests. TelstraSaturn will offer FTA channels and optional CA channels for an installation fee and monthly fee. TVNZ will have a more expensive set-top box capable of adding TelstraSaturn CA channels but no monthly fee. TelstraSaturn's choice of Irdeto is strange given the lack of security for this CA system demonstrated in Australia. Installers should contact Dave Lokes at (025) 772 036.

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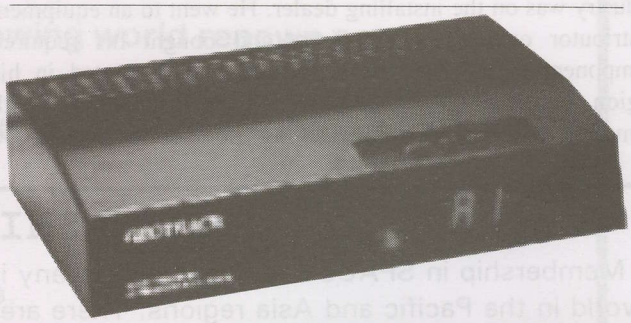

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A trade association for users, designers, installers, sellers of private satellite-direct systems in the Pacific Ocean & Asia Regions

Challenges for the installer

When the first C-band home dish systems appeared in the USA and Canada circa 1980, they were introduced to consumers through TV sales and service shops run by people who had a bit of a wild hair growing. The concept that one could get television "from space" with a "disc" antenna was totally foreign to consumer and installer alike. And it was expensive - the basic 3m region dish, satellite receiver, LNA (which was before the LNB), feed and cabling typically cost the installer between US$4,000 and US$7,000. No, the pricing was not a rip off - the equipment has literally hand made, nobody had production lines going and the receiver parts and LNA (low noise amplifiers) were very dear and rationed. Some of the must-have-to-build-a-receiver components were produced in quantities of under 250 a month which pretty much determined just how many home dish systems might be produced per month.

Within a year all of this changed as home "TVRO" caught on and other volume users of small dish systems (radio stations taking programming feeds for example) suddenly tumbled to the attraction of satellite connection. By 1982, a home dish system ready to install could be assembled for under US$2,000 and the pricing drops had an immediate impact upon sales volume which in turn had an even greater impact on pricing. By 1983 more than 50,000 systems per month were being sold and the *consumers* were often paying under $2,000 for a completely installed system.

Through this growing-pain period, the focal point of the industry was on the installing dealer. He went to an equipment distributor or the factory direct and bought his required component parts. Then he advertised and promoted in his region, attracted sales and scheduled the installations. With complete C-band systems selling for under US$2,000 -installed by the end of 1983, the next major step that further increased sales was home system financing on a national scale. Several firms who were in business to loan money discovered that advancing $2,000 to a home owner was a good risk because in the process they acquired a second mortgage on the home itself. This made it possible for dealers to sell systems for as little as US$100 "down" and 12 - 48 monthly payments. Business boomed further, production ramped to over 100,000 complete systems per month. Japanese firms such as Uniden moved in with high volume production techniques and as volume soared prices tumbled further. It was free market economy at its best.

The one aspect that did not change from 1980 through 1984 was the importance of the installing dealer. As the more successful dealers grew their volume, some were handling as many as 100 complete systems each month. With consumer financing available, the last impediment to rapid growth disappeared. A dealer using 100 systems monthly, more than 1,000 each year, had buying power. He could talk with and negotiate the best deal for the antennas, motor actuators, LNBs and receivers with any supplier he wished simply because of his buying volume.

All of this happened prior to the first Foxtel/BSkyB/Sky NZ category of programming provider. When North American C-band sales were having their hey-day, programmers were totally separate from equipment. But the programming (including all of the movie and sport channels) was analogue C-band and free to air - a situation that could not be allowed to continue indefinitely. The programming which C-band system consumers were watching was not intended for them - it was for cable TV systems who were paying for each channel of service on a monthly basis negotiated with the programmers. Obviously cable system operators were not pleased that

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer." All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each year (September 27 - 29 in Melbourne - 2001). Members also participate in policy creation forums, have correspondence training courses available and their support makes possible the TV show SPACE Pacific Report. To find out more, contact (fax) 64-9-406-1083 or use information request card in previous issues of SatFACTS. Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

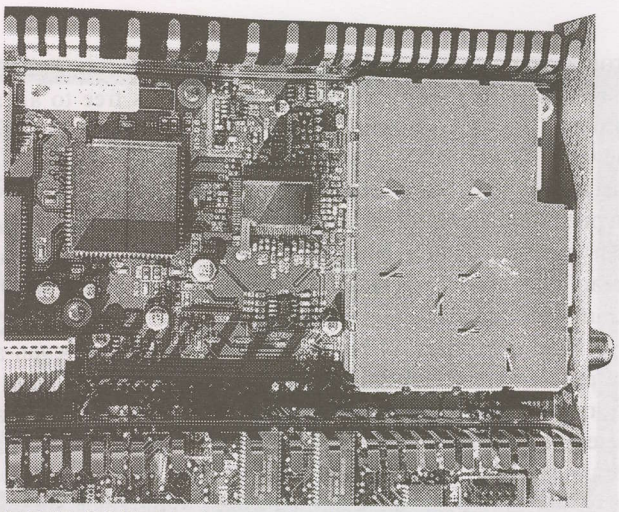
programming they bought and paid for was being "pirated" (that was cable's word although legally it was free to air and available to anyone with reception equipment) by home viewers. When cable TV systems began to actually lose customers who were disconnecting their cable service in favour of spending $2,000 (with time payments) for a C-band dish system, cable's hierarchy drew a line in the sand. Scrambling was inevitable. As would be piracy of the scrambled broadcasts that followed.

C-band dish sales all but died when scrambling began and the programmers such as HBO (Home Box Office) spared no effort in making sure the public at large knew that C-band systems were no longer as desirable as they might have previously been. When "free movies" and "free sports" went away, C-band dish sales ground to a rapid halt throwing thousands out of work and closing factories from Japan and Taiwan to Arkansas.

Today's programmer dominated installation business is a natural follow-on to the wild and unpredictable 1980's C-band market in North America. Installers now are closely monitored and closely regulated by programmer created "rules". A C-band dealer in 1980 was making a couple of thousand dollars "profit" for each system he sold and installed, dropping to $500 by 1983 but offset by big time growth in volume. Profit on the equipment (buy wholesale, sell retail), the installation and "kickbacks" from the finance company all blended together to keep the installer business successful.

Today's programmer-hired installer sells nothing but his time in a closed shop atmosphere where you play by the programmer rules or you don't play at all. If you want to be more than a trained mechanic in 2001, you'll have to find something unique to do in and with satellite systems.

TECHNICAL CORNER



SOME SAY this is not the "correct" tuner, others say it can be "modified" if done carefully - see text.

Nokia Fans

Nokia fans are a special breed of satellite enthusiast. The original German-issued D-Box became the most desired enthusiast digital receiver of the 1990s shortly after release. The German-only software and instructions did not slow down people who knew from Internet postings that the D-Box could do things no other satellite receiver of the era might do. Two separate Nokia (D-Box) television shows have been created by SPACE: the original Robin Colquhoun description of the box and its software versions (SPACE Pacific Report 9905) and the Melbourne 2000 Patrick Middleton "Naughty Nokia" review of the then-latest software (SPR 0014).

There are many challenges in locating just the "right" Nokia version - there have been over 25 separate combinations of hard and software according to European sources. Some of these lend themselves to doing special tricks (such as supporting a CAM and smart card) but many do not. Model numbers (such as 9500S) are of no particular assistance as Nokia haphazardly made hard and software changes within model numbers.

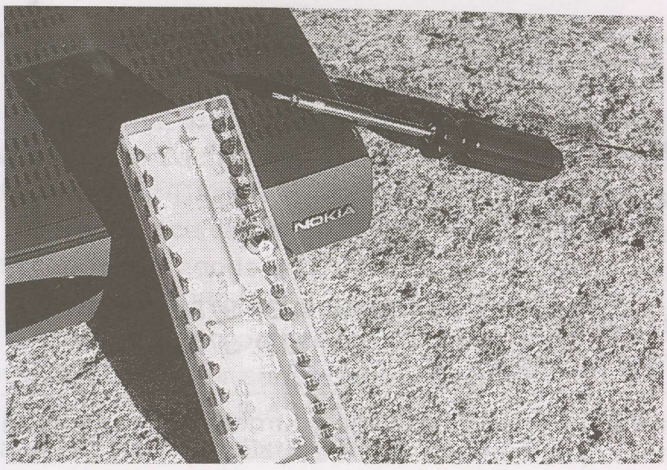
The most popular software continues to be available on Internet (http://www.dominance.net/overflow/; also try http://sat-digital-tv.provider.com.pl/utilse.htm, and http://www.rehtec.com/technic/index.htm) although the original after-market software creators have long since disappeared into the great satellite in the sky. The "right" Nokia model equipped with the "desirable" software and a CAM (conditional access module) will do things even the latest Humax and Strong dual CAM models will not do.

One of the first challenges is to get inside of a Nokia to determine (sometimes - not always) if you have a software desirable model. The sleeve around the chassis is held in place with 7 screws that have unconventional slotting. These are called "security screw" in the industry and are used in place of more common Philips or slot head screws to prevent the unskilled from tampering. While it is possible to wrench your way inside with a standard flat blade screw driver or even a Philips head, chances are you will destroy some of the screw heads in the process. A Dick Smith available tool kit (left, below) is the answer.

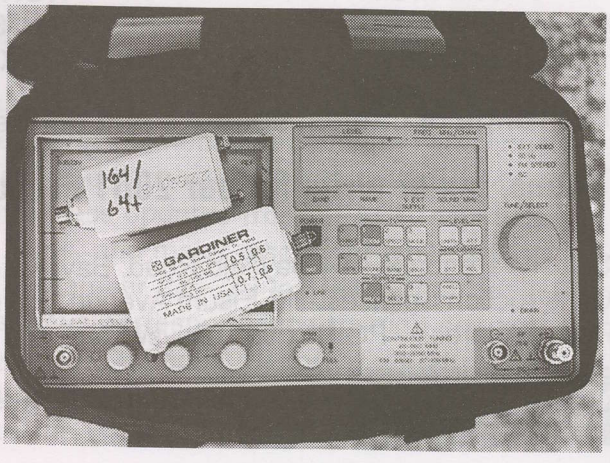
Most Nokia enthusiasts agree the tuner installed determines whether you can use the receiver to do special software things such as "full transponder search." Tech Guy suggests tuner models NDT 1006A and DF1 ST 1173 are the "correct" tuners: enter FEC=Auto & SR=0 for NDT tuners, FEC=3/4 & SR=27500 for DF1 tuners.

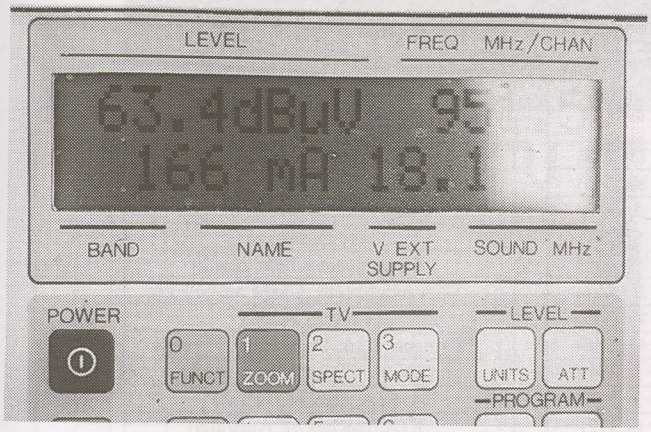
GC suggests the physical shape of the tuner is a clue. "If the tuner is rectangular with the short side parallel to the rear panel and the short side not occupying the entire width of the PCB (printed circuit board), that is a suitable model." He also warns, "If the tuner module runs at right angles to the rear panel, you cannot run or install any alternate software without damaging the functionality of the receiver - irreversibly." That sounds serious.

WAY IN. Pro's Kit 30 piece J.S.L. "tamper proof bits driver set" from Dick Smith (1999) is similar to Cat T4503 in 1999-2000 catalogue. TT10 adapter is correct for disassembling Nokia sleeves.

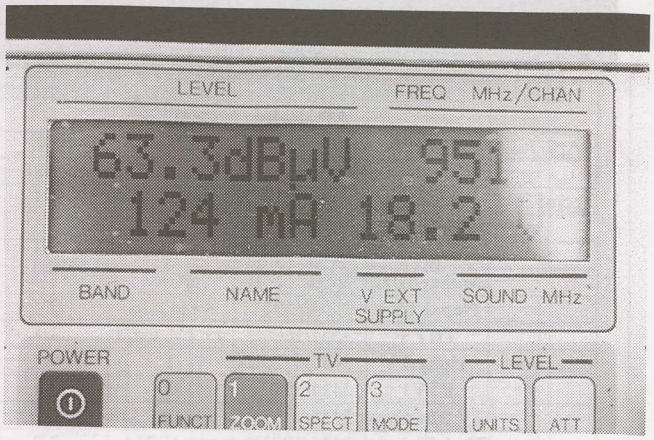


CHARACTERISATION. By measuring total noise product and current drain of each new LNB (f) as it is put into service, you have a reference for future trouble shooting. Numbers are relative - see text.





BRAND NEW - LNB produces 63.4 dBuV of "gain-noise signal" and draws 166 mA of current at 18V.



NOT BRAND NEW - broken. Same (model) LNB (f) produces almost identical noise but draws 124 mA.

PC disagrees with both. "If you know what you are doing and are careful doing it, there are only a very limited number of Nokia receivers (those with a tag on the bottom advising they are for Asian C-band use only) which cannot be used with alternate software."

LNB Characterisation

LNBs when fresh from the factory have two measurable characteristics: (1) The amount of current they draw, and, (2) the amount of "gain-noise" they generate. Both checks can be made with the LNB connected to a suitable measurement instrument (such as the Promax MC944).

Current drain tells you whether all stages are operating properly. Measure and record the current drain when the LNB is new, perhaps "log" it with a waterproof pen right on the case. In 9 out of 10 failure modes, the current draw will change dramatically (usually go lower) when the LNB fails or begins to fail. If you know what it was originally and can measure it after it has been in service, you have an instant check on "characteristics."

"Gain-noise" means the total gain of the amplifier (55 - 60 dB is typical) times the noise figure. You can measure gain-noise with a meter as the photos here show - numbers like +63.3 dBmV. This number will also change if an LNB failure occurs - the number goes down with a failing rear-end "stage", goes up with a failing "front end" stage. Measuring these characteristics when making an installation, recording them where they can be found, will save you heaps of time in trouble shooting if there is a LNB failure.

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 July 2001

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym	Receivers and Errata
Ap2/76E	TVB8 +	3849/1301H	4	3/4	13(.238)	PowVu, CA
	AXN	3920/1230H	up to 8	7/8	28(.340)	Tests, promos, **up to 5 chs FTA**
Thcm3/78.5	SkyChAust	3695/1455V	up to 3	3/4	5(.000)	Finally settled here from As2
	MRTV-Mynr	3676/1474H	1	2/3	6(.000)	erratic service
	Mega +	3640/1510H	12	3/4	28(.056)	Mega Cosmos here; new Sr
	Mahar/DD1	3600/1550H	up to 8	3/4	26(.661)	USA religion chs, CMM music FTA
	Nepal TV+	3554/1596V	3+ in mux	3/4	13(.333)	FTA + CA mux
	TRT +	3551/1600H	4+ TV, radio	3/4	13(.330)	3 Angels USA, Ch of Hope, + 9 radio
	Alpha TV	3430/1720H	1	3/4	3(.254)	Greece SCPC-OK in Australia
	PTV1	3424/1730V	1	3/4	3(.333)	FTA, also 3420 PTV3
	TV Maldives	3412/1738V	1	1/2	6(.312)	FTA (reaches SE Australia)
	Thai Global+	3425/1725V	up to 7?	2/3	27(.500)	FTA
InSat 2E/83	**ETV mux**	4005/1145V	6+ TV	3/4	27(.000)	increasingly active mux; wide beam
	DD2	3910/1240V	1	3/4	5(.000)	SCPC, ; OK E. Aust. wide beam
	DD National	3830/1320V	1	3/4	5(.000)	SCPC; OK E. Aust. wide beam
	Kairali TV	3699/1451V	1	3/4	3(.184)	SCPC, OK E. Aust wide beam
	AsiaNet	3683/1467V	1	3/4	4(.340)	SCPC, OK E. Aust. wide beam
	Sky Bangla	3525/1625V	1+ capable	7/8	24(.800)	MCPC capable; zone beam (weaker Aust)
As2/100.5E	**Euro Bouqt**	4000/1150H	6TV, 21r	3/4	28(.125)	FTA (TV5 teletext); MCM gone
	Reuters Sing	3907/1243H	1	3/4	5(.632)	occasional feeds, **some FTA** MPEG2
	Hubei/HBTV	3854/1296H	1	3/4	4(.418)	FTA SCPC, teletext
	Hunan/SRT	3847/1303H	1	3/4	4(.418)	FTA SCPC, teletext
	Guan./GDTV	3840/1310H	1	3/4	4(.418)	FTA SCPC, radio APID 81
	In. Mongolia	3828/1322H	2	3/4	8(.397)	FTA: #1 Mongolian, #2 Mandarin
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)	Mostly CA; **some FTA**
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)	**FTA** & CA
	WorldNt/US	3764/1386H	1 + 20 radio	3/4	6(.100)	FTA; up to 20 radio channels; SA format
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)	FTA SCPC, radio APID 256
	Jiangx/JXTV	3727/1423H	1	3/4	4(.418)	FTA SCPC, teletext, radio APID 81
	Fujian/SETV	3720/1430H	1	3/4	4(.418)	FTA SCPC, + radio APID 80
	Hubei TV	3713/1437H	1	3/4	4(.418)	FTA SCPC, radio APID 80
	Henan/Main	3706/1444H	1	3/4	4(.418)	FTA SCPC, + radio
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)	Thru TARBS Aust, subs now poss?
As2/100.5E	**Feeds**	4086/1064V	1	3/4	5(.632)	FTA SCPC feeds
	TVSN	4033/1117V	1	3/4	4(.298)	Occ. **FTA**, not same as Aust. version
	Jilin Sat TV	3875/1275V	1	3/4	4(.418)	FTA SCPC, + radio
	HeiLongJian	3834/1316V	1	3/4	4(.418)	FTA SCPC
	JSTV	3827/1323V	1	3/4	4(.418)	FTA SCPC, + radio
	Anhui TV	3820/1330V	1	3/4	4(.418)	FTA SCPC + radio
	ShaanxiQQQ	3813/1337V	1	3/4	4(.418)	FTA SCPC, radio APID 81
	Guan/GXTV	3806/1344V	1	3/4	4(.418)	FTA SCPC, radio APID 257
	Fashion TV	3795/1355V	1	3/4	2(.533)	FTA SCPC, reload VPID 308, APID 256
	MSTV	3791/1359V	1	3/4	4(.340)	FTA SCPC
	Myawady	3766/1384V	1	7/8	5(.080)	FTA SCPC - difficult to load
	Saudi TV1	3660/1490V	1 (?)	3/4	27(.500)	FTA MCPC includes MTA
As3S/105.5	Zee bouquet	3700/1450V	9TV	3/4	27(.500)	Mediaguard CA, **ch 8 FTA sometimes**
	ETV Bangla	3749/1401V	1TV	3/4	4(.340)	PowVu but FTA at this time
	Arirang TV	3755/1395V	1	7/8	4(.418)	FTA SCPC; reported audio problems
	Now TV	3760/1390H	2	7/8	26(.000)	includes TECH TV from USA, both FTA
	Star TV	3780/1370V	17(+)TV	3/4	28(.100)	NDS CA (Pace DVS211, Zenith)
	Star TV	3860/1290V	14(+)TV	3/4	27(500)	NDS CA (Pace DVS211, Zenith)
	Star TV	3880/1270H	12(+)TV	7/8	26(.850)	NDS CA (Pace DV211, Zenith) + **1 FTA**
	Indus Music	3900/1250V	5TV	7/8	27(.895)	PAL, NTSC, 1 ch CA
	Star TV	3940/1210V	12(+)TV	3/4	26(.850)	Most recent addition-NDS CA as above
	CNNI	3960/1190H	6(+)TV	3/4	26(.000)	PowVu CA; CNN + Cartoons, occ **FTA**
	Star TV	4000/1150H	7(+)TV	7/8	26(.850)	NDS CA + **info card FTA**
	Sun TV	4095/1055H	1	3/4	5(.554)	"History Channel" testing SCPC
	CCTV bqt	4129/1021H	4(+) TV	3/4	13(.240)	moved from 4115 July 1
	Zee Bqt #2	4135/1015V	4(+) TV	2/3	15(.000)	some FTA + CA
Cak1/107.5	Indovision (S-band)	2.536, 2.566, 2.596, 2.626	33(+) TV	7/8	20(.000)	NDS CA using RCA/Thomson, Pace IRDs
C2M/113E	**TPI**	4185/965V	1	3/4	6(.700)	FTA SCPA; NT/NC only
	Satelindo Bqt	4089/1061H	2+ 1 radio	3/4	14(.062)	ChNewAsV33/A34, CNBCV1057/A1058
	Indosiar	4074/1076V	1	3/4	6(.500)	FTA SCPC; NT/NC only
	Anteve	4055/1095V	1	3/4	6(.510)	FTA SCPC; NT/NConly
	SCTV	4048/1102V	1	3/4	6(.618)	FTA SCPC; NT/NC only
	MMBM#1	4000/1150H	11TV, radio	3/4	26(.666)	CA, Aust subs avail-sometimes FTA

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(C2M/113	**ETTV Shop**	3790/1360H	1	3/4	3(.050)	FTA SCPC
	MMBM#2	3760/1390H	11TV,radio	3/4	26(.666)	CA, Aust subs avail-10 **radio** typ **FTA**
	Brunei/Sing	3733/1417H	1TV	3/4	6(.000)	FTA; share time, Brunei-23hrs,Sing 1h
	RCTI	3475/1675H	1	3/4	8(.000)	FTA SCPC, Australia OK
JcSt3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(.000)	PowVu, some **FTA** (ch # 1,3)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)	CA & **FTA** NTSC: Japan, Taiwan
MeaSat 2	Astro Mux	11.477H (+)	up to 7TV	7/8	30(.000)	CA (again)
Op 3/156	**Mediasat**	12.336V/T2	7TV, radio +	2/3	30(.000)	FTA, CA - new chs June-reload
	Aurora	12.407V/T3		2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.532V/T5	Inc Zee TV	2/3	30(.000)	cvrs Aust, NZ 90 cm; CA (*)
	Aurora	12.595V/T6		3/4	30(.000)	Aust only; * - smart card p. 28
	Aurora	12.657V/T7	6CA testing	2/3	30(.000)	cvrs Aust, NZ 90cm; CA(*)
	Aurora	12.720V/T8		3/4	30(.000)	Aust only;* - smart card p. 28
	Austar/Optus	12.376H/T10		3/4	29(.473)	Austar I-TV and Optus tests
	Austar/Foxtl	12.438H/T11		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.501H/T12		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.564H/T13		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.626H/T14		3/4	29(.473)	CA, subscription available Australia
	Austar/Foxtl	12.688H/T15	(some FTA ra)	3/4	29(.473)	CA, subscription available Australia
Op 1/160	**ABC NT fd**	12.260V	1TV, 3 radio	3/4	5(.026)	may go to 12.280; V832, A833
	ABC feeds	12.317H	1	3/4	6(.980)	also 12.326, 12.335; ex PAS8 Ku
	Central 7	12.354H	1TV	3/4	3(.688)	VPID1280, APID 1281
	Imparja mx	12.360H	1	3/4	5(.424)	VPID 1024, APID 1025
	Mediasat#2	12.406V	up to 6 TV	2/3	30(.000)	also try Sr 28.000; FTA & CA
	Mediasat#3	12.424H	3+ TV	2/3	19(.800)	net feeds, Australia only, FTA & CA
	TelstraSatum	12.483V	8TV	3/4	22(.500)	Tests; also 12.706, 12.733; CA, Irdeto
	Nine Net	12.512H	1 TV typ.	3/4	5(.632)	testing digital feeds
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(.500)	NDS CA, subscription available NZ
	Sky NZ	12.644/671V	9TV	3/4	22(.500)	NDS CA, subscription available NZ
	ABC HDTV	12.670H	4TV	7/8	14(.300)	also 12.688, 12.706H-same parameters
PAS8/166	TARBS3	12.326H	13TV + radio	3/4	28(.067)	TPG/Eurodec CA, occ. FTA
	TARBS	12.526H	13TV + radio	3/4	28(.067)	TPG /Eurodec CA, occ. FTA
	TARBS2	12.606H	13TV + radio	3/4	28(.067)	Tests, inc. ESPN, see TARBS above
	JEDI/TVB	12.686H	11+ TV	3/4	28(.126)	Irdeto CA, **some FTA** tests
	Boomerang	12.725H	5 TV	7/8	25(.728)	2 chs only, mostly FTA, closing down
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)	PowVu CA
	NHK Joho	4065/1085H	7TV, 1 radio	3/4	26(.470)	PowVu CA & **FTA**; subscription avail
	Japan Bqt	4050/1100H	2	3/4	12(.000)	PowVu CA; NTV Int, Fuji TV
	ESPN USA	4020/1130H	7+TV, data	7/8	26(.470)	PowVu CA; ch 11 DCP-CCP bootload
	Discovery	3980/1170H	8 typ.	3/4	27(.690)	PowVu/CA (some audio **FTA**)
	CalBqt/Pas8	3940/1210H	up to 8TV	7/8	27(.690)	PowVu CA & **FTA (EWTN/EB Net)**
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)	FTA at this time
	Filipino Bqt	3880/1270V	up to 9 TV	3/4	28(.700)	Some **FTA**; also 4040V, 27.686,7/8
	Tzu-Chi TV	38501300H	up to 4	3/4	13(.240))	inc. 'Power TV' - Chinese
	CCTV Mux	3839/1311H	up to 4	3/4	13(.240)	PowVu FTA, will replace PAS-2
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)	was As2; PowVu CA
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(.000)	PowVu, CNN now CA
	MTV	3740/1410H	8	2/3	27(.500)	CA; #7,8 **FTA feeds**
PAS2/169	Pv Bouquet	12.290V	2+ TV, radio	2/3	27(.500)	PowVu CA, WIN, ABC NT
	WA PowVu	12.637(.5)V	4TV, 8 radio	1/2	18(.500)	PowVu CA, WA only - D9234
	HK PowVu	4148/1002V	up to 8	2/3	24(.430)	PowVu CA; some **FTA**
	TVB Mux	4058/1092V	up to 5	3/4	13(.382)	CA feeds to pay-TV
	Fox Bouquet	3992/1158V	8TV/data	7/8	26(.470)	Pv, CA/FTA (**FTA ch 3 only**)
	Feeds	3966/1184V	1	2/3	6(.620)	PowVu (FTA) occ feeds
	Feeds	3957/1193V	1	2/3	6(.620)	PowVu (FTA) occ. feeds
	Aust-feeds	3942/1208V	1	2/3	6(.620)	Mediasat outward bound feeds
	Feeds	3929/1221V	1	3/4	10(.850)	PowVu (FTA) occ sport feeds
	Feeds	3912/1238V	1	2/3	6(.620)	PowVu(FTA) occ. feeds
	Feeds	3898/1252V	1	2/3	12(.000)	PowVu (FTA) occ. feeds
	Middle East	3836/1314V	4 typ (+ more)	3/4	13(.331)	Pv FTA, testing Irdeto; was 3778V
	Feeds	3803/1347V	1	2/3	10(.322)	PowVu (FTA) occ sport feeds
	BBC +	3743/1407V	3	3/4	21(.800)	**BBC FTA**, others CA usually
	CCTV Pv	3716/1434V	3+ typical	3/4	13(.240)	PowVu FTA; # pgm chs varies

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym	Receivers and Errata
(PAS-2/169)	**Feeds**	4040/1010H	1	3/4	10(.850)	PowVu occ FTA feeds
	KBS/Korea	4026/1124H	1	3/4	5(.062)	occ. **FTA**, usually CA
	7thDayAdv.	3872/1278H	1	3/4	6(.620)	Sat, Sun 0900+UTC; also sport 3873
	Feeds	3868/1182H	1	2/3	6(.620)	FTA (occ sport); also try 3863,Sr6.100
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498	FTA-typ NTSC-occ sport, live Shuttle
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)	PowVu CA + **FTA**
	occ feeds	3776/1374H	1 typ	3/4	5(.560)	occ feeds, typ FTA; also Sr 5.600
	Korean Bqt	3762/1388H	up to 3	3/4	11(.570))	Korean MUX, reloasd June 01
	Satcom 1-6	3743/1407H	up to 5	7/8	19(.465)	use unknown at this time
I702/176E	AFRTS	4177/973LHC	8TV, 12+radio	3/4	26(.694)	PowVu CA
	RFO Poly	4027/1123L	1TV	3/4	4(566)	SE spot beam
I701/180E	TNTV	11.060V	9	3/4	30(.000)	eastern spotbeam CA; 8,000 subs
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)	Mediaguard CA, up to 3 ch **FTA**
	TVNZ	4195/955RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ	4178/972RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	TVNZ/feeds	4161/989RHC	1	3/4	5(.632)	DMV/NTL early version, occ feds, typ ca
	RFO-Canal+	4086/1064L	4TV, radio	5/6	13(.347)	east hemi 20.5 dBw thru 2003+
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)	DMV/NTL early version,occ feeds, typ ca
	TVNZ feeds	4044/1106R	1	3/4	5(.632)	SCPC, mixed CA and **FTA** feeds
	NZ Prime TV	4024/1126L	1	2/3	6(.876)	PowVu CA; Auckland net feeds
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)	CA, Leitch encoded
	Ioarana	3772/1378L	1	3/4	4(.566)	FTA SCPC; East Hemi Beam-Tahiti
	TVNZ	3846/1304R	1	3/4	5(.632)	SCPC, mixed CA & **FTA**, feeds
	10 Australia	37691381R	4	7/8	20(.000)	PowVu CA & **FTA; #3 TBN**
	USA feeds	3749/1401R	4?	?	26(400)	16-QAM (not MPEG-2 compatible)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness! Note: Some deletions July 15 issue - old IRDs no longer common in commerce and/or impossible to obtain service for.)

ASTRX D 1000CI. SCPC, MCPC, two CAM slots, auto search routine. Reviews SF#78 & #79. LTG Mason 61-3-9457 1222.
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM Pty Ltd, 61-2-9939-4377.
Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICRI 5400. Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, review SF#76.
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. Int. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. Tricky to use.
Nokia 9200. When equipped with proper CAM, does Aurora, pay-TV services provided software has been "modified" with Dr Overflow or similar program was available from (www.BAKKERELECTRONICS.COM), now only from established users.
Nokia 9500/9600. Numerous versions for different world parts; not distributed in Pacific but assistance from Av-Comm Pty Ltd.
Pace DVS211. NDS CA (no FTA) for Star Asia, previously used for Indovision. (Solution 42, 61-2-9820-5962)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818)
Pace DVR500. Original DGT400 modified for NBC (PAS-2) affiliate use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version.
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia.
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH(below)- 222 out of production
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review Nov. 1998. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). Scientific Atlanta 61-2-9452-3388.
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-3749)
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above).
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Aust 61-3-9553-3399.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, Aurora, exc. vendor support. Strong Aust 61-3-9553-3399.
UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faultyP/S. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel-limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers.
Xanadu. DVB compliant special receiver for members of SPACE Pacific (Av-comm Pty Ltd, tel +61-2-9939-4377)

Accessories:

Aurora smart cards. New v1.6 now available, 1.2 no longer available for RABS. Price now A$105, Sciteq 61-8-9306-3738.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 7/8; pgm ch 11 and follow instructions (do not leave early!)

SatFACTS Pacific/Asian FTA ANALOGUE Watch: 15 July, 2001

BIRD/ Location	RF/IF & Polarity	Service	Errata
I703/57E	3808/1342R	Udaya TV	
	4052/1098R	WorldNet	VOA subcrs.
	4178/972L	MTA Inter.	
I604/602/60E	4166/984	various feeds	
I704/66E	3765/1385R	tests	
	4015/1135L	Mongolia	(SECAM)
PAS4/68.5E	3864/1286V	BBC World	
	3905/1245V	Mah.Vede Vi	6.6, 7.2
	3907/1243H	SET Mid East	6.8, 7.2
	4155/995VV	DD News	6.3
	4181/969H	MTV	6.8, 7.56+
PAS7/72E	3470/1680V	test signal	to be 68.5E
LM1/75E	3980/1170V	various	(Madagascar)
ApStar 2R	3780/1370H	TV Malagasy	(SECAM)
Thaicom3/78E	4155/995VV	DD12 Jam. +	5.5
	3800/1350V	DD Punjabi	5.5
	3634/1516V	tests	
	3616/1534V	ETC Punjabi	6.6,7.-2
	3536/1614V	Jain TV	6.8
	3470/1680V	ETC	6.6,7.02
Exprs 6A/80E	3675/1475R	RTR	(global beam)
InSat 2E/83E	3447/1703V	Kairali	6.6
	348151665V	ETV Marathi	6.6
	3565/1585V	Vijay	6.6
	3603/1547V	JayaTV	6.6
	3650/1500V	AsiaNet	6.6
	3809/1341V	DD5-Tamil	5.5
	3849/1301V	DD-National	5.5
	3929/1221V	DD Metro	5.5
	3961/1189V	DD8-And.Pra	5.5
	4040/1110V	ETV Bangla	6.6
	4089/1061V	DD7-W.Bangl	5.5
ChnStr1/87.5E	3880/1270H	occ feeds/ card	P4 NSW, Ntsc
ST1/88E	3550/1600V	test card	
	3582/1568V	Nila TV	(vintage TV)
Yamal 102/90E	3675/1475R	RTR1	P3 NSW
	3875/1275R	Orbita 1	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	
MeSat-1/91.5E	3710/1440H	VTV1,2, 4	
	3880/1270H	RTM-1	
Gz 28/96.5	3675/1475R	RTR	inc +/- 3.7
Chinasat22/98	3900/1250H	tests	+ 3940/1210
InSat 2B/93.5E	4170/980V	DD Gyandar.	NSW on 3.7m
	4161/989H	DD-4 Kerala	5.5
	4125/1025H	DD-11 Gujarati	5.5
	3889/1261H	DD-10 Mahara.	5.5
	3802/1348H	DD-9 Kamats.	5.5
	3725/1425H	feeds	
	2.595H	DD NorthEast	S-band, 5.5

BIRD/ Location	RF/IF & Polarity	Service	Errata
As2/100.5E	388501270H	WorldNet	VOA subcrs
Exp. 9/103E	3675/1475R	RTR	inc +/- 2.6
	3875/1275R	Vrk Apt	
As3S/105.5E	3640/1510H	Asia Plus	5.55, 6.2
	3660/1490V	Urdu TV	ex-Zee;6.6,7.2
	3680/1470H	CETV	6.6
(temp FTA)	3800/1350H	Star Sport	NTSC;5.94+
(temp FTA)	3840/1310H	Channel [V]	NTSC;5.58+
(temp FTA)	3920/1230H	Phoenix Ch	NTSC;6.2+
	4020/1130V	Sahara TV	6.8
	4060/1090V	IndusVision	6.6, 7.2
	4100/1050V	PTV2/World	6.6
T'kom1/108E	4000/1150H	tests	not recently
PalapC2/113E	4160/990H	(France) TV5	5.8, 6.6
	4120/1030H	MTV Asia	6.8,7.56,7.74
	4040/1110H	CNBC	6.8 audio
	3980/1170V	CNNI	6.8 audio
	3840/1310H	TVRI	6.8 audio
	3742/1408V	RCTI	English subcr
AsSat1/122E	3677/1473V	Test card	3933/1217H
ChinS 6/125E	4085/1065V	feeds	seldom seen
JcSat3/128E	3768/1382V	feeds	occ., P5 NZ
	4085/1065V	test card	NTSC, 6.8
Ap1A/134E	4160/1050V	CETV	
	3980/1170V	CETV1	
	3900/1250V	CETV2	
Ap1A/138E	4160/990H	CCTV7	
G25/140E	3675/1475R	ORT Moscow	inc. +/- 5.3
	3875/1275R	feeds, tests	
LMAP2/142.5	3675/1475L	RTR Moscow	+/- 3.5 deg.
Gorizont 33	3675/1475R	tests	+/- 1.3 deg
	3875/1275R	RTR	audio 7.5
Ag2/146E	3787/1363H	GMA	P1/2 s. eqtr
Me2/148E	4080/1070H	test card	occ. use
PAS8/166.5E	3880/1270V	test card, feeds	not full time
	3865/1285H	Napa test card	not fulltime
PAS2/169E	3940/1240V	Napa test card	not full time
SpNet4/172E	3920/1230V	unknown video	
1802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
I702/176E	4166/984R	Feeds	from 177E
	4187/963R	Occ. feeds	
I701/180E	4187/963R	Occ. feeds	
	3845/1305R	Occ. feeds	inc. fromUSA
	3930/1220R	USA net feeds	**FTA** & ca
	3975/1175R	Occ. feeds	

Ap2/76E	3960/1190H	HBO Asia	GI Digicipher2
C2/113E	3930/1220H	Filip. Peo. Net	GI 1.5 MPEG
Ap1/138E	4100/1050V	ESPN	BMAC

BANDSCAN: InSat 2E Analysis

InSat 2E and InSat 3B "fly" together at 83.0E. India is the only country other than the United States and Russia to have developed its own totally independent satellite design-construction and launch capability for geo-stationary operation. Indian satellites have developed through single channel S-band birds of the late 70s to the complex C (and C+Ku soon) satellites which are in direct support of the most rapid growth satellite and cable market in the world; India of course.

India's Sriharikota Island launch complex, off the eastern coast, is the facility where the country's 401 tonne Geosynchronous Satellite Launch Vehicle will begin its series of journeys. With this new capability, Indian scientists have aggressive plans for the future including a 900 kg moon orbiting research satellite and a similar project to the planet MARS.

InSat 2E was launched on April 2, 1999. It has on board C-band transponders that cover the range 3.4 GHz to 4.1 GHz. Satellite InSat 3B was launched March 21, 2000 and has the Indian-exclusive range between 4.5 and 4.75 GHz. Before you rush out to locate a feed, LNB and receiver for this upper-C allocation, be aware the 13 transponders on this satellite are 99% unused with only a test card signal radiating on 4624Hz (Sr 2.222, 1/2). InSat 2E C-band beacons are located at 4.190.976 and 4.197.504. InSat 3B's beacon is on 11.699.50. InSat 2E is reported as far east as the Australian eastern coast on dishes as small as 2.4m. There are two different C-band coverage beams: "zone" has reduced signal level into eastern and southern Australia (example: analogue P3 on 3.7m dish) while "wide" is stronger (example: P5 on 3.7m dish). DL is David Leach (NSW) who performed a verification-check of this report.

3430Vt/test channel/zone beam.
3450Vt/Kairali TV/PAL analogue/zone beam (DL)
3447Vt/Kairali TV/PAL analogue, audio 6.60 (dialect)/zone beam
3485Vt/ETV Marathi/PAL analogue, audio 6.6 (dialect)/zone beam (DL suggests 3495)
3525Vt/SKY Bangla +/MPEG-2 Sr 24.800, FEC 7/8, VPID 257, APID 258; V273/A289; V274/A290 (dialect)/zone beam
3565Vt/Vijay TV/PAL analogue, audio 6.6 (dialect)/zone beam
3603Vt/Jaya TV/PAL analogue, audio 6.6 (dialect)/zone beam (DL suggests 3606)
3621Vt/test channel/zone beam
3650Vt/AsiaNet/PAL analogue, audio 6.6 (dialect)/wide beam
3683Vt/AsiaNet/ MPEG-2 tests Sr 4.340, ¾, VPID 4194, APID 4195/wide beam
3694Vt/test channel/wide beam
3699Vt/Kairali TV/ MPEG-2 Sr 3.184, FEC ¾, VPID 1160, APID 1120 (dialect)/wide beam
3790Vt/DD-5 Podhigal/ MPEG-2 Sr 5.000, FEC ¾, VPID 1110, APID 1211 (dialect)/zone beam
3809Vt/DD-5 Podhigal/PAL analogue, audio 5.5 + radio 6.15, 7.10, 7.62 (dialect)/zone beam (DL suggests 3813)
3830Vt/DD-National/ MPEG-2 Sr 5.000, FEC ¾, VPID 308, APID 256 (dialect)/wide beam
3849Vt/DD-National/ PAL analogue, audio 5.5 (dialect)/wide beam (DL suggests 3854)
3910Vt/DD-Metro/MPEG-2, Sr 5.000, FEC ¾, VPID 308, APID 256 (dialect)/wide beam (DL suggests 3909)
3929Vt/DD-Metro/PAL analogue, audio 5.5 (dialect)/wide beam
3961Vt/DD-8 Andhra Pradesh/PAL analogue, audio 5.5 (dialect)/zone beam (DL suggests 3965)
3979Vt/DD-8 Andhra Pradesh/MPEG-2, Sr 5.000, FEC ¾, VPID 512, APID 650 (dialect)/zone beam
3989Vt/test channel/wide beam
4005Vt/ETV/MPEG-2, Sr 27.000, FEC 3/4; (1) V1160/A1120, (2) V1260/A1220, (3) V1360, A1320, (4) V1460, A1420, (5) V1560, A1520, (6) V1660, A1620 [ETVOriya] (dialect)/wide beam
4040Vt/ETV Bangla/PAL analogue, audio 6.6 (dialect)/wide beam (DL suggests 4045)
4070Vt/DD-7 West Bengal/MPEG-2, Sr 5.000, FEC ¾, VPID308, APID 256 (dialect)/zone beam
4089Vt/D-7 West Bengal/PAL analogue, audio 5.5 (dialect) + radio 6.10, 6.58, 7.10, 7.62 (dialect)/zone beam (DL says 'Calcutta TV' pn 4093)

TUNING IN THE INDUSTRY'S TV PROGRAMME

SPACE Pacific, the Asia-Pacific industry membership trade association, has produced (and continues to produce) a series of one hour television programmes. These "SPACE Pacific Report" shows, hosted by Bob Cooper, cover a range of topics of interest to installers and enthusiasts. Show numbers and content are as follows: **#9901-** Spectrum Analyser techniques, **#9902-** Feeds and LNBs, **#9903-** Dish antenna designs and problems, **#9904-** The dish marketplace, and, "tiny parts," **#9905-** Dr Overflow (Nokia) software (Robin Colquhoun), **#9906-** How the uplink works (tour of RCA's Vernon Valley site), **#9907-** Uplink Two, including uplink transmitters, **#9908-** Digital Basics (Mark Long), **#9909-** Real World Installs (Mark Long), **#9910** - Installing a polar mount dish and signal level test equipment, **#9911** - "SPIN" (the hidden side of satellite). **#0012** - First Report from SPRSCS 2000 (recorded in Melbourne June 28, 29 - "Ideal IRDs," more), **#0013** - Second Report from SPRSCS 2000 (recorded in Melbourne June 29, 30 -"ABA Blackspot session"), **#0014** - Naughty Nokia from SPRSCS 2000; **#0015** - The DVB-T Tangle from SPRSCS 2000 (Eric Fien). "Report" is broadcast by Mediasat on Optus B3, 12.336Vt, ad-hoc channel 4(*) (Sr 30.000, FEC 2/3). The coming-weeks schedule: **Sunday July 15** - Show 0014, 0200-0300 UTC (1400 NZ, 1200 AEST, 0900 Western Australia; repeats 0700 UTC/7PM NZ, 5PM Sydney, 2PM Perth). **Sunday July 22** - Show 9901, same times as July 15; **Sunday July 29**- Show 9902, same times as July 15; **Sunday August 5** - Show 9903, same times as July 15; **Sunday August 12** - Show 9904, same times as July 15; **Sunday August 19** - Show 9905, same times as July 15; **Sunday August 26** - Show 9906, same time as July 15. (* - Mediasat may pre-empt showings, check other bouquet channels - if not on 4.) In the event of schedule changes (*), SPACE Pacific attempts to pre-announce which show(s) will appear through the SatFACTS Web site prior to each weekend (http://www.satfacts.kwikkopy.co.nz). SPRSCS 2000 sessions taping scheduled for play on Mediasat are currently in "editing production." Sponsorship of SPACE Pacific Report. In general answer to queries - Av-Comm, Satech and Sciteq have contributed corporate funding to make possible the production of the first set of nine SPACE Pacific Report programmes. IKUSI ANZ contributed funds for completion of 9910. If interested in sponsoring future shows, contact Bob Cooper at skyking@clear.net.nz (64-9-406-0651).

* - Note: Mediasat Sunday feed loads have increased and the first showing (0200UTC) may be "bumped" to accommodate other clients. The 0700UTC feed typically is not bumped and would be the better choice if taping for later review.

WITH THE OBSERVERS

AT PRESS DEADLINE

155W (west) - start looking there for signs of PAS-5 which is being drifted to this location from over-Atlantic with scheduled turn-on in September. Bird has 3 years station keeping fuel on board, will be geostationary, with C-band and +50dBw capable steerable Ku spot beam. No word on who will use it - stay tuned!

AsiaSat 2/ 100.5E: "MTA (Muslim Television Ahmadiyya-MTA) moved to 3660Vt, Sr 27.500, 3/4 (VPID 2560, APID 2561) from PAS-2 California bouquet - solid on 3m in Auckland" (**B.A. Khan**, NZ). "Reuters Singapore news feeds 3907Hz" (**D. Pemberton**).

AsiaSat 3/ 105.5E: "CCTV bouquet moved to 4129Hz, new Sr 13.240, 3/4 with CCTV-4, 9 and 1 + occ. news feeds" (**D. Leach**, NSW). TCM Australia, Cartoons Australia, Cartoons Philippines now on 3960Hz bqt CA; CNN Radio APID 1122. "Indus Music channel, promos, loops, 3900V replacing ALIVE TV, SR 27.900, 7/8. New analogue service, Urdu, replaced Zee on 3660Vt, audio 6.60" (**Crocker**, Aust).

Intelsat 701/ 180E: "Network search of 3769RHC (Ten Mux) reveals 3749RHC with Sr 26.400 also there but will not load?" (D. Pemberton, Aust). Ed's note: see bottom p. 4, "16-QAM". "New 3769 parameters, Sr 20.000, 7/8 with (1) V2160/A2120, (2) V2260, A2220, (3) V1360, A1320, (4) V1460, A1420 - should reload if you have done so since 1 June" (**Jacko**, Aust).

Intelsat 704/ 66E: "MCM moved here for service to India and surrounding Asia from AsiaSat 2 European Bouquet; 4055RHC, Sr 27.500, 3/4 replacing TV5" (**A. Zapara,** WA). Ed's note: MCM claims they are looking for a new way to reach Asia and Pacific which they lost by moving to 66E and they gained nothing in the process!

Optus B3/ 156E: New Aurora radio channel, FTA at this time; #67 - added to bottom of list, 12.532Vt, Sr 30.000, 2/3; Started as mono audio, left channel only, labelled "Tamil Radio - Trial Service"; Aurora Ch 4 (BTV1) and Ch 23 (Westlink) frequently seen with medical training material, FTA (**IF**, Qld). "New line-up MediaSat 12.336 (Sr 30.000, 2/3) is (1) MOU TV, (2) Thai 5 TV, (3) RTP International, (4) MSAT - occasional feeds including SPACE Pacific Report on Sundays, (5) TRT International, (6) TV5 Asia and (7) Deutsche Welle" (**S. Johnson**, NZ). Ed's note: Alas, RTPi, TV5 and DW are on "30 day trial" and whether they stay will depend upon viewer reaction to service providers. Also - California based TBN/Trinity Broadcasting is waiting in wings as potential replacement. "Changes in Foxtel/Austar bouquet - C7S2 now at end of list as National Geo # 2 and Lifestyle -2 also new" (PC, NSW) "Austar appears to have shut down their 'Interactive' promo on 12.376Hz" (Crocker, Aust).

Optus B1/ 160E: "TVNZ + TelstraSaturn changing Sr early in July after testing from mid-June; try 12.733Vt at 22.500 and 3/4 which loads first, then loads 12.483 and 12.706 for 24 programme channel total" (**C. Sutton**, NZ). "Have tested Irdeto CA" (**L. Mathews**, NZ). "Solid here on 90 cm dish in Sydney" (**G. Cratt**). Ed's note: First tests were done on Australia + NZ beam, subsequent is/to be on NZ only beam. "Did you notice TS's channel 12 has channel name of 'Hi Bob' - is that any *particular* Bob we know???" (L. Mathews,

ADIOS. MCM as a "partner" in European Bouquet (AsiaSat 2, 4000 Hz) abruptly ran off to Intelsat 705 (66E) where virtually nobody in Australia nor NZ can see them. Possible return to Asia and the Pacific? Possible but not likely. **Below**, Macao TV's FTA C-band feed has 2 programme channels, one ID showing As2 105.5E C-band and As3S 105.5E Ku numbers.

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f5-f8 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for August 15th issue: August 4 by mail or 5PM NZ August 6th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

Auckland, NZ). "ABC started high definition service interlinking, 12.670, 12.688, 12.706 Hz, Sr for all is 14.300, FEC 7/8 - Ch 1 is ABC HDTV, Ch 2 ABC TV Sydney, Ch 3 ABC Kids test card and some looped programming tests, Ch 4 ABC TV3 test card" (**Bill Richards**, Aust).

Palapa C2M/ 113E: "MMBN 3760 and 4000Hz, Sr 26.662, 3/4 have been frequently FTA except for X-rated two channels" (D. Leach. NSW). "ATVI PAL format card, Radio Australia, JJJ have left 3880Hz; try 3976Hz VPID 2061, FEC 1/2 and watch 3880Hz, perhaps Sr 24.000, 3/4 " (**S. Schriff**, Taiwan). "TV Brunei and TV Singapore Int now on 3733Hz, Sr 6.000, FEC 3/4" (Crocker, Aust).

PanAmSat PAS-2/ 169E: "CCTV changed Sr to 13.240 on 3716Vt, expect this to shut down by sometime in August because they are now also on PAS-8" (D. Pemberton, Aust.). "More changes 4148Vt, Power TV new - CTN, TVBI 1 and 2 now gone from HK bqt" (S. Schriff, Taiwan). "Motorcycle racing weekends SCPC 3929Vt, Sr 10.850, 3/4 from around 8PM AEST" (Jacko, Aust). "4058Vt, Sr 13.382, 3/4 has (1) TVB8 V1160, A1120, (2) TVBJ V1260, A 1220, (3) Xing He V1360, A1320 (4) Utility V1460, A1420 and (5) Xing Cantonese V1360, A1322 - all CA" (B Richards, Aust).

PanAmSat PAS-8/ 166.5E: "CCTV now on 3839Hz, Sr 13.240, 3/4 - apparent replacement for PAS-2 service" (D. Pemberton, Aust.). "Much stronger on PAS-8 " (D. Leach).

PanAmSat PAS-10/ 68.5E: Services will switch from PAS-4, 7 in mid-August at this permanent location.

Telekom 1/ 107E: "Testing again using CNBC, 3620Hz, SR 20.000, 3/4 FTA" (S. Schriff, Taiwan).

Thaicom 2/3/ 78.5E: Nepal-TV test card reported 3554Vt, Sr 13.333, 3/4 (VPID 514, APID 642).

Soapbox: "EA (Electronics Australia) has disappeared from my usual news-stands leaving Silicon Chip as a solo act; have others had this experience?" (**PL**, Melbourne). "I cannot believe TVNZ+TelstraSaturn will be insisting installers put in a new dish - a second one if the house already has Sky. But that is the word on the street" (**R. Whitehead**). "ABC says they will have both Government support (A$15m per year) and commercial sponsors for new ATVI service" (**P. Hadlow**). "CNBC lost half hour of air time June 20 when primary and secondary fibre circuits were cut at PAS 8 uplink centre by Singapore Telecom - are these guys the ones who will take over Optus???" (**PJ**) "Hi from Peter in Sri Lanka - have had a marvellous time with Sir Arthur!" (**P. Escher**). "Hello Bob - wait until you see the dish Eutelsat has given to me (it has only been used once!)" (**Sir Arthur C. Clarke**, Sri Lanka). "A client advised us of a report in SatFACTS that described our Radio Sign transmitter. We manufacture these in Brisbane. It measures 115 x 65 25mm, runs on 12V DC; memory allows for up to 4 minutes recording time. It runs at 10 microwatts (output) which under ABA licence is the maximum allowed; a second version ups this to 10 milliwatts. Frequency is determined with phase locked loop dip switch set oscillator, between 87.5 and 107.5 MHz. The input audio level caters for download from a PC sound card, 2mm diameter antenna is 700mm long. Unit is designed to sit on a window sill with antenna extended up the glass and attached by a suction cup. We also have a version intended for use in a vehicle with TNC or BNC fitting for quick connection to existing vehicle mounted antenna. We also provide other transmitters ranging in power from 50 milliwatts to 1kW. (**Peter Montague**, N-COM Pty Ltd, Ph +61-7-3855-5922, web www.n-com .com.au). "Samoa will have 3-channel terrestrial pay-TV launch using UHF and ex-Sky (NZ) decoders sometime in August - ProCom Cable is partner with Sky NZ" (**Grant Tormey**)

AT Sign-off

You decide - who's the bastard here?

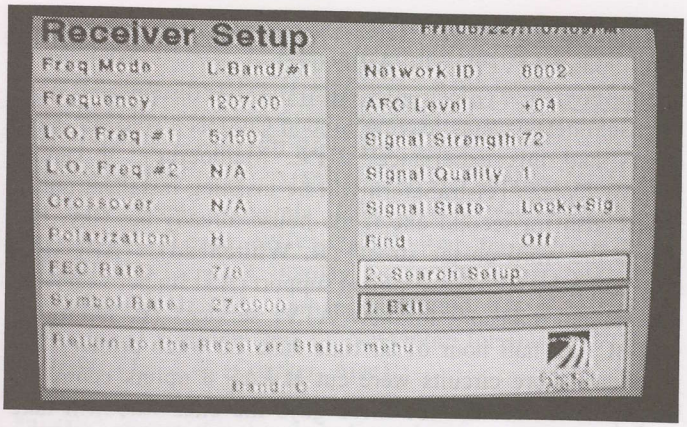
Over the years I have written about and damned Scientific Atlanta on numerous occasions. Most recently (SF#72, August 2000) I wrote in frustration over a problem created either by SA or PanAmSat (or both in collusion) regarding an upgrade for a D9223 commercial receiver we use for reception from Country Music Television (CMT). Ultimately we sent the IRD back to Toronto, Canada for a "software upgrade" (at our expense - total cost over US$700 for shipping and SA charges) because when CMT moved from PAS-2 to PAS-8, the receiver would no longer work with the software version previously used on PAS-2 for four years without problems.

I have the greatest respect for SA's very clever PowerVu system. They have managed to pull off their very own *private*, non-standard, non-compliant MPEG standard and hardly anyone is the wiser. Some of my closest friends, Chief Engineers for national TV networks, don't realise (until I explain it to them) that PowerVu is unique to SA and that this uniqueness means as a customer they pay far more for hardware and service and the privilege of being a member of the "Scientific Atlanta User Club" (abbreviated SUCK).

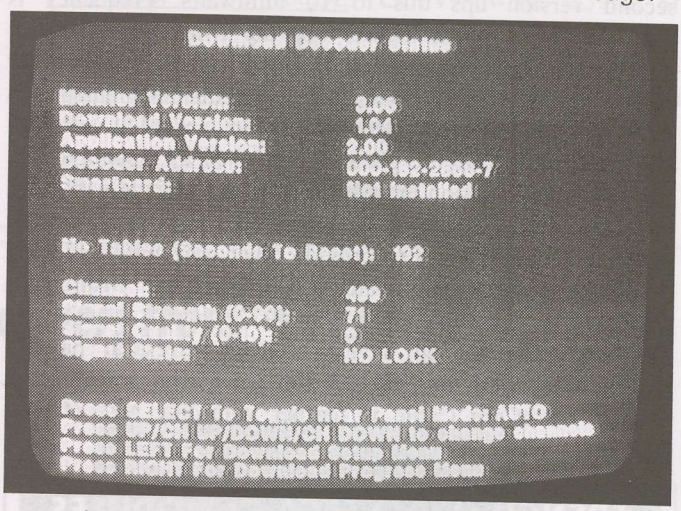
I am in the minority. I dislike SA with a fervour and passion; they are to me the scum of the earth. But - I am not the only member of the SA 'SUCK' club. "SH", a well known and much respected satellite professional here in the Pacific, in response to my Email query, responded:

"*My personal experience is that 9 out of 10 fail* in their lifetime; less than 5 years. The power supply is ludicrous; each time you have a power surge or power cut, one fails. The SA9234 is an especially hard case - if for some reason the IRD is activated, run for some months and then turned off, when it is turned back on after say 2 - 3 weeks of being off the mains, it explodes. Literally. A couple of years ago I purchased a D9225 for my SMATV system's affiliation with Discovery, paying US$1250 for it. Comes a power surge and the unit fails; we scratched our head and took the metal sleeve off to inspect the power supply (by this time we are quite proficient in SA power supplies!). In this case the power supply and the main board had gone so I arranged to return the unit for repair. When it arrived (at the Australian repair facility), I was told, '*sorry - you have* ***opened*** *the case and the warranty is now void. That will be* (US)*$900 please.*' No amount of logic or discussion turned them around. They could not even *guess* how if I *took off* the cover sleeve I would *blow up* a power supply and the main board. '*US$900, please!*' I told them to get f----- and asked Discovery for help. They found me a brand new replacement in Canada for US$700. Still a bunch of money but hey - far better than SA changing out two boards for US$900.

"*Everything about their operation is a hassle.* I tried to get them to EMS (airmail) repaired units back from Australia and they said, '*No, we can't do that because an employee would have to take it to the post office. Fed-X comes here and picks up.*' The difference is profound. With Fed-X I have to pay an exorbitant fee (typically US$150 +) to have a 'professional customs broker' clear the damned thing through customs. With EMS, it lands at the post office and I do it myself for no dollars. And I get it the same day whereas with Fed-X and a 'professional' customs broker - I may wait days for the receiver, especially if it lands over a weekend.



TCM/Cartoons locked with signal strength of 72, although video "quality" at 1 is right on the edge. This on PAS-8 3940 (our L-band says 1207 rather than 1210 - a function of the LNB being off by 3 MHz). Go to channel 499 (below) and everything stays the same except - 11th line down - "**NO LOCK**" (in red no less!). If you can't lock channel 499, no upgrade possible. No upgrade, no way to move to As3S for new Cartoon service. Scum bags.



"Over the years I just grown weary of having to play their game their way - they have no consideration for the person who pays their salary. I finally told them to get stuffed and we fix our own SA receivers now (more than 50) with a guy we trained to diagnose and trouble shoot their power supplies (9 out of 10 failures are the power supply)."

In my most recent case my cable system as a TCM/Cartoon affiliate was forced (their decision - not mine) to move from Cartoons on PAS-8 to Cartoons on AsiaSat 3. "*Before you move to AsiaSat 3, your receiver's software must be upgraded*" I was told. "*Go to* (transponder number) *and channel 499 and follow the instruction to initiate an automatic upgrade.*"

I did that. Monday, again on Tuesday, then on Wednesday. The software refused to upgrade; three times. Which is the same thing that happened with my CMT IRD last August.

"*Well, you* ***now*** *must return it to Toronto*" I was told. Like SH I have grown tired of the SA game, and, there goes another wasted US$700. SA is a scum bag outfit. And I have only told you half of the PAS-8 to As3 fisasco.

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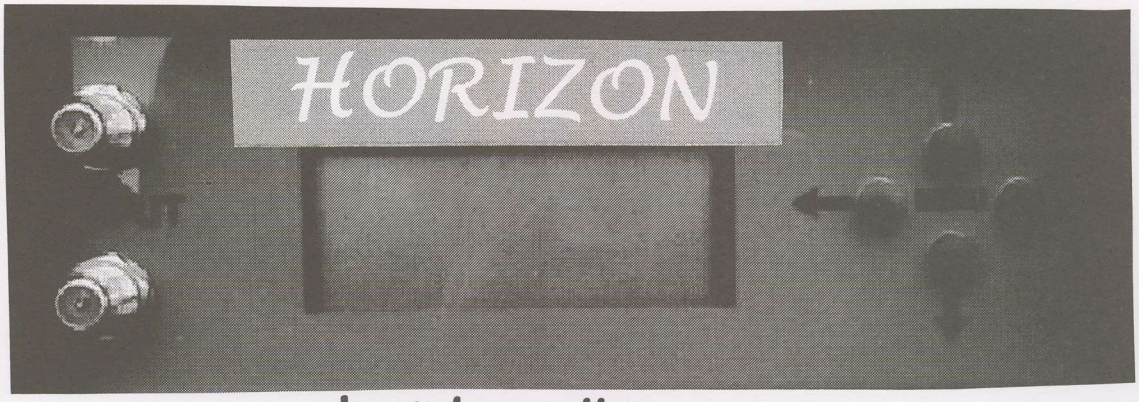

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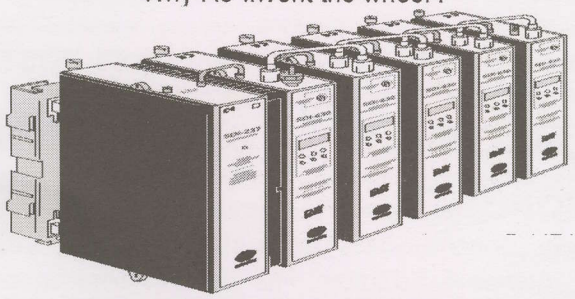

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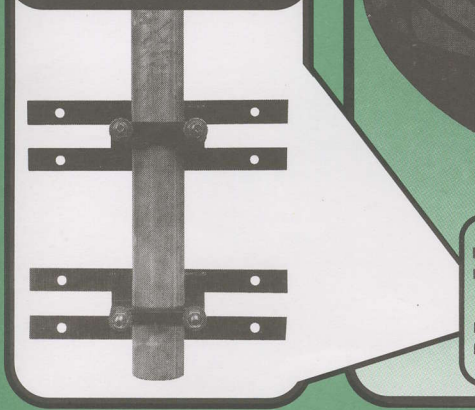

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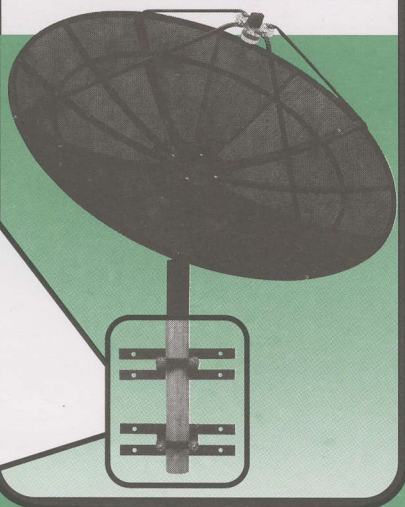

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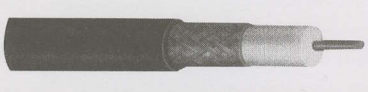

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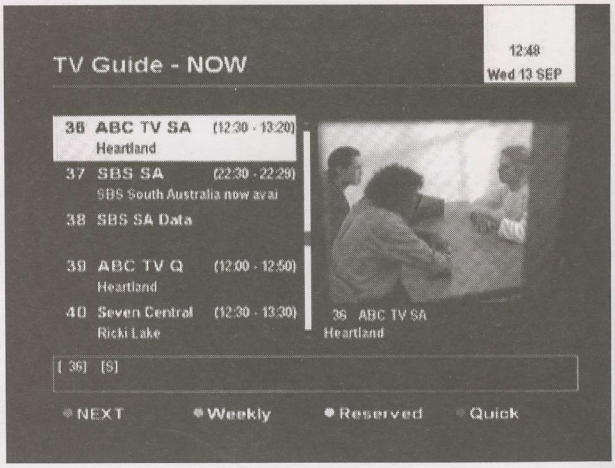

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